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THE

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and Civilian.

VOL. XI. October, 1853. No. I.

ARTICLE I.

Railroad to the Pacific Ocean.

The policy of connecting the shores of the Atlantic and Pacific oceans by a railroad is so generally approved, and its consummation so universally desired, that it would be a useless waste of time to discuss the merits of the enterprise. This great project has been long before the people, and it is obvious that public sentiment in all parts of the Union demands the immediate commencement and vigorous prosecution of the work under the auspices of the General Government. But before it can be commenced, there are many important details to be settled by legislation; upon the adjustment of which the final success of the enterprise will, in a great measure, depend.

The location of the route will present the first, the most important, and, withal, the most embarrassing point to be adjusted by the national legislature. Local interests, sectional prejudices and individual speculations, will all be brought to bear in full force upon this point; and hence we deem it our duty, as public journalists, to counteract as far as practicable, the influence of these adverse elements.

As if resolved to repudiate the reports of the engineers now engaged in exploring the several routes ordered to be surveyed by the Executive, conductors of the press, in almost every section of the country, have engaged in advocating certain routes and in opposing others. Nearly every railroad running westwardly, which has been proposed between the Gulf of Mexico and the Falls of St. Anthony, is claimed by their projectors to be a section of the great trunk line which is to convey the commerce between Europe and Asia across our continent. One might suppose that the absurdity

of some of these claims would make them ridiculous and harmless; but let us not be deceived: they have doubtless been set up and urged upon the people along the respective lines for the purpose of giving character and strength to local enterprises; and we are persuaded that most of the railroad schemes which have been devised within the last swo years for the construction of lines in a westerly direction, are based upon the idea of their ultimate connection with the shores of the Pacific. Hence it is to be apprehended that no route can be proposed which will not be met by strong and, perhaps, uncompromising opposition, that will prevent its adoption.

This is a result anticipated by certain speculators who have been and are now actively engaged in bringing it about, with a view to obtain for their own benefit the control and emoluments of the most stupendous and important enterprise ever achieved or undertaken by any nation. And this they hope to accomplish, not by the investment of their own money, but by means to be obtained in part from the General Government, and in part from other resources than their own exchequers. The first overt movement looking to this object was made in Boston, in 1849; and though the originators of that scheme proposed to commence their road at St. Louis, we promptly objected to their plan, and, as we believe, successfully exposed the enormous speculations meditated by those who conceived the "Boston project."* It would seem that the Boston projectors had taken no steps to prepare the public mind for their movement; but based their expectation of success upon a sudden and bold proposition endorsed by the calculating talent and energy of that enterprising city. The New York company chartered with a capital of $100,000,000, have adopted a different system of tactics. They break ground so far from the point of attack, and operate at points apparently so disconnected, that few, except those initiated into the mysteries of the scheme, understand the main object designed to be accomplished by their movements.

The New York Company, though but recently organized, may be traced back to the Memphis Convention, held in 1849, where it was shadowed forth by a resolution recommending the survey of a southern route. Disconnected from all views of speculation, this resolution was so reasonable that scarce any one who desired to

* Vide Western Journal, vol. II, page 343. Vol. III, page 1 to 12. Ibid. 193 to 201.

see the road built, could object to it; but it was a strong point gained: from that time the idea of a southern route became a national fact established by a convention representing fourteen States of the Union. That resolution was followed up, after the adjournment of the convention, by a very long and elaborate address from Lieutenant Maury, the gentleman who presided over its deliberations, in which he undertook to establish the claims of a southern route over all others. In his address the author labored to associate the measure of building the southern road with the construction of a ship-canal across the Isthmus. This was designed, as it may be supposed, to bring the strength of New York and other eastern States to aid in carrying out the scheme of a southern railroad. We believed at the time that Lieutenant Maury's address was calculated to injure the prospects of a railroad to the Pacific, and expressed our apprehensions upon that point in a review of his communication, which was published in the "Western Journal."* But we have never imagined, nor do we now intend to intimate, that he had any design of defeating the work as a national measure, or of assisting a company of speculators to obtain control of the road for their own benefit.

During the state of excitement between the North and the South which succeeded the Memphis convention, the Pacific railroad received but little attention in Congress; but the southern scheme was continually kept before the public as a national measure. And it was not until the time approached, when it was obvious that public opinion would compel Congress to act definitely upon the subject, that the speculators began to uncover themselves. Their first public movement was to clothe themselves with corporate privileges, by virtue whereof they now generously propose to build a railroad from some point in the Valley of the Mississippi to the Pacific ocean. It will require no argument to show that this charter places the corporators in an attitude antagonistic to the action of Congress upon any route except that proposed by themselves; and we think we are warranted in the conclusion that, without being aware of it, many conductors of the public press and small politicians have already been enlisted in behalf of the New-York company.

The arguments against the power of Congress to create corporations have been revived, and are undergoing discussion, in con-

* Vide Western Journal, vol. III, page 351.

nection with the assumed inefficiency on the part of the General Government in prosecuting public works. Now if the N. York company can bring the public and Congress to coincide with them on these two points, it is but reasonable for them to expect that the enterprise will naturally fall into their hands. But they are too cautious and shrewd to rest their case upon these grounds without fortifying their position at all points. Hence we may expect opposition to the organization and settlement of Nebraska, with a view of embarrassing the construction of a road commencing on the western boundary of any of the States north of Texas. As we understand their plan, they propose to build the road through the State of Texas to the Rio del Norte, without the aid of the General Government; and to add force to this generous proposition, the policy of reducing the tariff is again brought up, and will, in all probability, be made to bear with tremendous effect on the Pacific railroad question. We feel assured that this view of the subject will not be regarded as unwarranted, when it is remembered that the champion of free trade is a subscriber for $10,000,000 of stock in this brilliant scheme.

But the people are resolved upon having a railroad to the Pacific, and may doubt whether the company can raise the money to accomplish a work which is not likely to pay remunerating dividends to stockholders. It happens, however, very opportunely, that Mr. Septimus Norris, Civil and Mechanical Engineer of Philadelphia, has furnished the public with a statement calculated to obviate all doubts on this point. This is the most wonderful achievement of civil engineering that has come to our knowledge: for the author seems to have found no difficulty in estimating the cost of constructing and operating a railroad, 2000 miles in length, over a country which he does not claim to have seen, and declaring dividends to stock without leaving his office.

If such statements can gain credit with the people, it is obvious that all who have constitutional scruples respecting the power of the General Government to create corporations; and those who believe the Government cannot accomplish the work in as short a time and for as small a sum as can individuals; and all who desire the reduction of the tariff, will cease to look to Congress for the means of building the road.

But notwithstanding Mr. Norris has shown that the road will pay large dividends, yet, we understand that the New York Com-

pany expect to obtain a sufficient quantity of land from Texas to build the road to the Rio del Norte, and look to the General Government or Mexico for the means to complete the road to the Pacific.

Placing the enterprise in this view, the subscription of $10,000,000 by the Hon. R. J. Walker may be regarded as quite modest, and indicative of great liberality towards his associates; especially when, as it seems, he enjoyed the privilege of being the first subscriber. Many individuals, in like circumstances, would have been strongly tempted to take the lion's share. Holding so large an interest in this enterprise, it would be unreasonable to insist upon his proceeding on a mission to China, until the plans of the company shall have been recognized and sanctioned by Congress.

But we are told that the New York Company propose to commence their road at St. Louis. Doubtless they would agree to commence even at St. Paul, and build the Mississippi valley railroad for us, if the Government would give them a sufficient quantity of land, and they could thereby secure the support of the Missouri and Iowa delegation in Congress. We trust, however, that Missouri will not be entrapped by a scheme so replete with mischief. For ourselves, before we can consent to favor the N. York project, we must be convinced that no practicable route to the Pacific can be found north of El Paso, and be assured, moreover, that the company will not claim or receive dividends on the means invested in the road by the General Government.

We stand upon the same ground which we occupied in 1849: we are the advocates of a NATIONAL ROAD. A road to be constructed by the aid of the General Government. National in its location, and strictly national in respect to the benefits to be derived from it; and the practicable route nearest the center of our territory, other considerations being equal, is, in our opinion, the one best calculated to secure these objects. Nor should the productive capacity of the uninhabited region, traversed by the route, be overlooked by those whose duty it will be to make the location.

We frankly admit that there is much force in the argument of those who insist that a company of individuals can accomplish the work in a shorter time and at less cost than can the General Government. Nor would we insist upon the creation of a corporation by Congress, when a respectable portion of the people hold the opinion that such an act would be constitutional.

We believe that a corporation created by some one of the States with power to build the road by the consent of the States and Territories through which it should pass, would be the most efficient and certain plan of accomplishing the work. Such a company should be prohibited from holding any real estate not necessary for the construction, and convenience of operating the road; and should be limited in its reception of dividends to ten per cent. per annum on the amount actually invested by the corporators. A company incorporated and organized upon these principles should be authorized to receive sixty thousand dollars in money or stock from the General Government for each sum of forty thousand dollars advanced by itself.

This plan, we believe, would ensure the accomplishment of the work in as short a time as a prudent regard to the economy of its construction would authorize. And while the amount appropriated by Congress would ensure remunerating dividends to the stockholders, the limit to their dividends would cheapen the transportation of persons and merchandize, and in this way remunerate the nation for its investment. Indeed, the transportation of the mails, troops and public property, free of charge, may be regarded as a fair remuneration to the Government for the investment of sixty thousand dollars.

But it may be objected that the company would have no inducement to equip and operate the road to a greater extent than would be necessary to enable it to earn the ten per cent. dividend. This objection may be removed by a provision in the charter limiting the charges of transportation, and compelling the company to receive and transport, without delay, all persons who may desire to travel, and all property which may be offered for transportation.

It will be obvious to the intelligent reader, that we have only aimed to sketch the outlines of a plan. Many details will be required which have not been noticed; and it may be found upon examination that those suggested will require modifications. But we feel a strong conviction in the soundness and efficiency of the plan proposed, and are persuaded that it would be regarded with favor, could it be generally and fully discussed before the American people. It is calculated, 1st, to prevent scheming speculators from plundering the public, and enriching themselves out of the property of the nation; 2nd, to separate the Pacific railroad from all political questions, and enable the true friends of the measure to

try it upon its merits; and 3d, to secure to the nation a reasonable pecuniary remuneration for the amount of money appropriated.

Now, if we should be sustained in these views by intelligent and well-judging men, we respectfully ask, why the Pacific railroad company, incorporated by the General Assembly of Missouri, should not make an effort to place itself in a condition to extend its work across the continent? We are aware that its charter does not contain the provisions and limitations contemplated in our plan; but if the plan should meet with sufficient approbation from the public to authorize such a step, the Legislature might be convened for the purpose of amending the charter so as to enable the company to go before Congress with an honest scheme: one that would command the favorable consideration and respect of the nation, and defeat the speculators in railroads, national appropriations and politics.

We give no opinion respecting the practicability of any route which has been suggested. We are content to abide by the reports to be made by men of science, after they shall have made their surveys and estimates. But, in the mean time we propose to keep a watchful eye upon the movements of scheming speculators and trading politicians, and we admonish all true friends of this great work to guard themselves against being led off from the main points by entering into unprofitable discussions respecting routes.

It is a part of the policy of the enemies of a national road to encourage these discussions for the purpose of strengthening the prejudices which already exist between different sections of the country, and to divert the attention of the public from their own schemes.

We reiterate what we have said in another place: we have no ambition to be known as projectors or the originators of new measures. We study and labor for the country, and look for our reward in its prosperity. Hence we claim the right to ask of our readers to give the views we have taken of this important subject a careful examination. The grandeur of the enterprise, and the results to be expected from its accomplishment, are sufficient to awaken the most intense interest in the mind of every individual susceptible of emotions of national pride and patriotism.

A road located on the route proposed by the New York Company, would be totally deficient in many of the elements which

should enter into a national work. It can afford no facilities for the settlement of the extensive region lying between the States and the Pacific ocean. Indeed, the projectors seem studiously to avoid entering upon the territory belonging to the United States; and if their road should be built upon the line contemplated, it will not satisfy the demands of commerce, or the social wants of a large portion of the American people. Consequently, if a practicable route should be found farther north, the Government will be urged and compelled in time to make an appropriation for a second route. This state of things should be guarded against; and may be avoided by the construction of a *great trunk line, to be located as near the center of our own territory as the physical character of the country will admit;* and in favor of such a route we earnestly invoke the co-operation of all who desire to promote the commercial prosperity and moral grandeur of our broad republic.

ARTICLE II.

[From the Mining Magazine.]

Iron and Zinc.

MANUFACTURE OF IRON FROM LAKE SUPERIOR ORES.

To W. J. TENNEY, *Editor of the Mining Magazine.*

I will give you my impressions regarding the iron region and the manufacture of iron from the Lake Superior ores, though I have hitherto avoided giving publicity to opinions opposed as mine have always been to the popular and extravagant statements, that have been spread abroad through the papers on this object.

The Lake Superior iron ores belong to the variety of ores known as *specular iron*—a combination of iron and oxygen, of which the metallic proportion *cannot* exceed by weight seventy-two and a small fraction per centum. *Magnetic iron ore* accompanies the specular, and the two are frequently mixed. The greatest proportion of iron ever obtained from this mixture cannot exceed seventy-five per centum. No reliable analysis of the Lake Superior ores has ever given so high a yield as this. Statements of a greater yield prove their own falsity, and the ignorance of the operator. Such ores are *not peculiar* to the Lake Superior region. They are almost or quite as abundant in Missouri; and similar ores are extensively worked on the shores of Lake Champlain; in Orange co., New York, and in New Jersey. New Hampshire and Georgia, both contain in mountain masses varieties little differing from them.

Some of the Andover ore of New Jersey cannot be distinguished from the choicest of the Lake Superior ores; and if made into bar iron direct, with the same care as were the samples for trial prepared from this ore, there is no question but it would exhibit the same remarkable strength; the pig-iron manufactured from it, though made with anthracite, possesses the strength of the best charcoal iron.

Being very free from earthy matters, these ores are well adapted for working in bloomery fires. They require a preparatory roasting, stamping and screening, by which they are subjected to some loss, and finally yield about a ton of metallic iron to two of ore as taken from the mine. More or less is lost in the cinder, according to the skill of the workmen, the purity of the ores and the adaptedness of the apparatus.

The bloomery process is a convenient one, where the ores are of this rich character, and charcoal is abundant. The charcoal made from the hard maple and birch of this region, is especially well adapted for this process. It is of remarkable soundness and density, owing to the great hardness of the wood. The same cause adds materially, however, to its cost. Each bloomery fire, worked by two bloomers and two ordinary workmen, turns out about a ton of blooms in twenty-four hours. The wages amount to eight dollars, and the consumption of coal, including waste, and all really *paid for*, can seldom be estimated at much less than 300 bushels. Of the charcoal, such as I saw at the works, 250 bushels ought to be enough. The expenses of manufacture may then be estimated as follows:—

Estimated cost of a ton of blooms made on the Lake Shore.

2 tons of ore, quarrying and hauling 12 miles, at $2.....	$4 00
Roasting same, at $1	2 00
Stamping and screening, at 50 cents	1 00
250 bushels Charcoal, at 8 cents (actual cost)	20 00
2 bloomers at $3, 2 helpers at $1, or same amount as by actual contract.....	8 00
Repairs $1, Superintendence $1, Interest $1.....	3 00
General Expenses.....	2 00
Cost on Lake Shore.....	$40 00
Shipping, freight, carting, storage and commission, say...	15 00
Cost when sold at Cleveland.....	$55 00

This cost calculated upon a small operation, with large allowance for transportation, *may be* considerably reduced by running twenty or thirty fires in the same establishment, and by the construction of a rail or plank road from the mines to the Lake shore. But there are several points requiring careful consideration before one could be justified in pronouncing upon the success of such an undertaking. In the first place, no business is so wholly in the hands

of skillful workmen as that of manufacturing blooms. For every ton made in twenty-four hours, two men are required, who have served a regular apprenticeship, and acquired their ability only by long practice. Their places cannot be filled with men picked up any where. The success of the business is dependent wholly upon their skill and good will. Strikes are common among them, and are frequently disastrous to the works. This is especially to be feared in a remote district, shut off a large portion of the year from all communication with other places where this manufacture is carried on. It is probable that this cause, more than any other, has kept back the spread of large bloomeries in New York and New Jersey, and limited the business, with few exceptions, to small works, conducted by the proprietors, who were once bloomers themselves.

Again to carry on a large establishment, powerful machinery is required, and this must be kept in steady running order. But such machinery is liable to accidents and breakages, to repair which recourse must be had to complete machine shops, foundries and large forges. Now these must either be provided at the works, and competent mechanics kept employed at them, or delays of a whole winter may be involved.

Then again, for six or seven months in the year the products of the works are accumulating without a possibility of getting them to market. Opportunities are lost of taking advantage of high prices. The capital lying dead, adds materially to the expenses.

Such considerations as these, together with others arising from the great expenses of introducing and supporting the population required for carrying on this business at Lake Superior, have led me to look with incredulity upon the large estimates of profits to arise so soon from the manufacture of blooms in this region.

Still I am very far from questioning the great value of these rich ores—with few exceptions the only iron ores from the country east of the Alleghanies to the Mississippi River, north of Tennessee, that have been or will be discovered, suitable for the manufacture of the best boiler-plate iron, wire, car-axles, car-wheels, and other work of refined or cast-iron, requiring the greatest strength. The demand for them will be immense. The great Lakes already draw enormous supplies of iron from the eastern portion of the Atlantic States; much of the best of it, after it had passed through the mills at Pittsburg, and been mixed and deteriorated with the poorer western iron; some of its supplies have crossed the Atlantic, and in the state of Scotch pig finds no serious competition in Wisconsin and Illinois, after having passed around a fourth of the circumference of the globe. The Lake Superior mines are destined to change the course of this trade, and supply better iron than is now generally found about the great Lakes. But can this be done by a process which requires the slow labor of four men to make a ton of iron in twenty-four hours, besides all those employed

in the various other departments of the work? For many purposes, iron made direct from the ore will be preferred to that first made into pig-iron and then refined; and the comparatively small quantity so prepared will find a profitable sale in a prosperous state of the iron market. But the great demands of the trade must be met, as they are now, by iron produced from blast furnaces. It is the establishment of these, judiciously located, in connection with large rolling mills, forges, nail factories, &c., that will first really develope the resources of the iron region, and realize the profits that its mines are capable of producing.

To work these ores successfully in the blast furnace, they require mixing with other leaner ores. It may be there are varieties in the same region, that will bring down the percentage of the whole to about 50 of cast iron, and afford the materials (with such limestone as is already discovered in the country, or may be carried there as return freight,) for a fluid-running, glassy cinder—the first requisite in making pig-iron. It is more likely the country below can furnish a better variety of these poorer materials. In the same way the ores of Lake Champlain are now most advantageously worked on the Hudson river, where they meet other primary ores from the Highlands and the hematites of Massachusetts and Connecticut.

By the mixture, made with judgment, the objectionable qualities of one kind are neutralized by the opposite qualities of the others, which by themselves would be equally objectionable.

In this way the poor ores are made profitable, and produce good iron. So the bog ores of lower Michigan and Ohio, and the clay iron-stones of the coal formation may be turned to good account worked with the rich ores of Lake Superior; and according to the different mixtures many desirable varieties of iron may be obtained.

The canal past the Saut once completed, the expense of transporting the ore below to be there smelted, seems to be of little moment in comparison with the expenses and difficulties consequent on the running of blast furnaces in the upper country. These in their present improved construction and heavy machinery, are still more dependent than bloomeries for their uninterrupted running, which is essential to their success, on convenient access to machine shops. This is one reason why they are now more generally found close to large cities, than as formerly in remote districts, near the mines. Here, too, the works are at all times sure of workmen, and the proprietors are not compelled to clear lands, build houses, cultivate farms, and import stock and other supplies for their support. At all times they are under the eye and control of the parties interested. The products of the works are at once in the market, and they are varied to meet the immediate demand. This ability to fill orders is almost as essential for the complete success of blast furnaces as of rolling mills. It is not improbable that the additional cost of transportation of ore (to Detroit for in-

stance), would be more than met by the cheapness of charcoal, which must always be obtained on the shores of the lower lakes. In Baltimore there are seven or eight blast furnaces, all of which are supplied with fuel brought to them from the wooded country around Chesapeake Bay. Lake St. Clair, in this respect, is to Detroit what the Chesapeake is to Baltimore. Wood to both is furnished for about two dollars per cord and no fears need be entertained that the supplies will ever be exhausted. The wood is brought to the furnace dock and charred in kilns containing from fifty to sixty cords each. At two dollars per cord, charcoal will cost, thus prepared, less than six cents per bushel. The vast country supplying the wood keeps up a healthy competition; the supplies are certain, and there is little variation in the prices. To one familiar with charcoal furnaces, and the great difficulty of stocking them, this will present itself as a consideration of the highest importance. It would certainly debar any prudent man from rashly attempting to make pig iron in the lake country, with its present population.

At all well managed blast furnaces, it is customary to keep a large stock of ore on hand. It is benefitted by lying a year exposed to the weather. There is hence no unnecessary use of capital in getting down during the summer the ore for a year or more, as there is in keeping a winter's stock of iron on hand in the upper country.

Many people have a mistaken notion that the best iron can only be made direct from the ore; others, that charcoal iron made with *cold* blast is the only pig-iron suitable for making the strongest refined iron. Yet the hot-blast iron of the Housatonic valley has always found a good market at the forges where car-axles are made, and it is selected for the bars which Collins orders for his axes, and which, perhaps, are as carefully scrutinized and subjected to as severe tests as iron for any other purposes. And so great are the modern improvements in the manufacture of pig-iron, even that made with *anthracite* from the Andover ores and puddled, produces bar iron little inferior to the best charcoal blooms. There can, therefore, be no reasonable objection to working the Lake Superior ores in charcoal blast furnaces, on the score of their making poorer iron. Though success has not attended the attempts to use our bituminous coals for making pig-iron on a large scale, there is more reason in looking to these as the fuel that will probably be hereafter employed for the reduction of the Lake Superior ores, than now to find fault with charcoal furnaces.

As the iron business is now conducted, the profits of the smaller establishments bear no comparison with those laid out on a liberal scale—supplied with the most thorough machinery, and of the latest and most approved designs. The size of the furnaces has greatly increased the last few years, and the production of some of them has far exceeded in proportion, their increased capacity.

—At Hudson, N. Y., are two anthracite furnaces of 16 feet across the boshes, which make over 180 tons, each one, of pig-iron per week. The manager of these works, C. C. Alger, Esq., has probably produced the greatest results in proportion to their size with these furnaces of any in the world. His success with the Stockbridge charcoal blast furnace, of ten feet bosh, was almost as remarkable, running it repeatedly at the rate of 90 tons per week. The two furnaces of Messrs. Cooper & Hewitt, which are run with the Andover ores, are twenty feet across the boshes, and have produced about 220 tons each per week. These great results are ascribed mostly to a steady and efficient blast, of much greater pressure than has ever before been used.—The machinery to obtain this requires a large outlay of capital. The two furnaces at Hudson complete cost about $175,000, and the other two somewhat over this sum.

Charcoal furnaces would be considerably less expensive, but though it might be expedient to begin with only one or two, an engine or blowing apparatus ought to be provided sufficient for a larger number. The cost of manufacture, supposing there are two furnaces of the most approved construction located at Detroit, should not vary materially from the following estimate, the company being supposed to own the mine, as in the former estimate of the cost of blooms:

Estimated cost of making Charcoal Pig Iron at Detroit, in large blast furnaces, railroad to the mines, and canal built.

1¾ tons of ore at $4	$7 00
130 bushels charcoal at 4 cents	5 20
Flux 50 cents, labor $2	2 50
Repairs 50 cents, superintendence 50 cents	1 00
Interest, general expenses	1 00
	$16 70

Having written already much more than I intended, I will leave it for others to calculate the cost of puddling this iron and rolling it into bars, and to determine the extent and cost of refineries that should be added to the furnaces. One point only of interest I would not fail to call attention to.

On the Island of Elba are found large bodies of ore similar to those of Lake Superior. The furnaces for smelting them are on the opposite shore of Tuscaney. They are small, and of very peculiar construction, different from any other furnaces, but by their extraordinary yield they have proved to be extremely well adapted for smelting this kind of ore.

ON THE USE OF BURNT LIME INSTEAD OF LIMESTONE AS A FLUX IN BLAST-FURNACES. BY E. MONTEFIORE-LEVI AND DR. EMIL SCHMIDT.

The study of the gasses formed in blast-furnaces, with which these authors have been engaged for some years, has shown that the use of carbonate of lime as a flux is attended with great loss,

and likewise that this loss may be obviated by using burnt lime instead. The gases were taken from a blast-furnace, 54 feet high, at Ougrée, at thirty-two places, 1 foot apart, and the percentage of carbonic acid determined.

According to calculation, 8000 kilogrms. carbonic acid require for conversion into carbonic oxide 2173 kilogrms. of carbon, and the quantity of heat developed in the combination of this quantity of carbon with 1 equiv. of oxygen, is 2173·1386=3,011,778 heat units. At the same time, however, these 8000 kilogrms. of carbonic acid are reduced to 5092 kilogrms. of carbonic oxide by the action of the carbon, a change which is accompanied by the absorption of a quantity of heat equal to that developed by the combustion of the latter gas, *i. e.*, 5092·2488=12,667,896 heat units. Consequently, deducting the 3,011,778 heat units developed in the oxidation of carbon from the total number of heat units absorbed in the reduction of carbonic acid to carbonic oxide, there still remains a loss of temperature equal to 9,656,118 heat units, equivalent to the heat developed by the combustion of 1609 kilogrms. of coke.

These considerations led the authors to employ burnt lime in working blast-furnaces, and thus to obviate the loss of heat. The experiment was commenced at Ougrée in July, 1849. During the first few days the results were unsatisfactory, the management of the furnace was difficult, and the slags black and pasty. Subsequently, when taking into account the impurities of ordinary limestone, 63 parts of burnt lime were substituted for 100 parts of limestone: the working of the furnace, until it was let out at the beginning of 1851, was continually regular and good; during these eighteen months the most satisfactory results were obtained. The saving of coke and increase of production were, as the experimenters anticipated, very evident; moreover, the raw iron was of better quality, and all the interior parts of the furnace, especially the tymp stone, remained in a much better state of preservation than when limestone was used. The following table gives the quantities of coke consumed, in the production of 100 kilogrms. raw iron, in the above-mentioned furnace, during the four months before and the four after the alteration of the charging, all other conditions remaining the same:

With limestone.		With burnt lime.	
1849. March	150·0 kilogr.	1849. July	142 kilogr.
April	145·5 "	August	138 "
May	156·5 "	September	133 "
June	151·5 "	October	139 "
Average quantity	153·2 kilogr.	Average quantity	137·75 kilogr.

Average quantity consumed with limestone 153·20 or 100 p. c. coke.
Average quantity consumed with burnt lime 137·75 or 90 p. c. coke.

Difference 15·45 or 10 per cent.

The practical saving is therefore 10 per cent., which corresponds tolerably well with the theoretical result.

The experiment was repeated in 1850, in a second blast-furnace, with the same favorable result of increased production, saving of fuel, and easier working. The following table shows the quantity of coke consumed for every 100 kilogrms. of raw iron, and the production during the first six months, (reckoned at twenty-eight days). The figures in the first column refer to the furnace in which limestone alone was used; the second column to the first-mentioned furnace, in which burnt lime alone was used; and the third column to the second furnace, in which limestone was used for three months, and burnt lime for the next three months. All three furnaces are constructed alike, smelt the same ore, and produce the same kind of iron:

	Quantity of Coke in Kilogr. consumed for 100 Kilog. raw iron.			Reduction during Twenty-eight Days in Kilogrammes.		
	1 With limestone	2 With burnt lime	3 With Limestone	1 With Limestone	2 With Burnt lime	3 With Limestone.
April	165	145	163	436,000	601,000	459,000
May	165	147	159	447,000	582,000	461,000
June	160	147¼	164 With Burnt lime	477,000	588,000	488,000 With Burnt lime
July	161	146½	149¾	462,000	555,000	537,000
August	158¾	145	146	465,000	536,000	552,000
September...	153	147¾	146	477,000	577,000	690,000
Mean	160½	146¼	154⅜	461,000	573,000	516,000
Av.f. AptoJun	....	.....	162	.....	.....	469,000
Yr. July to Sep	....	.....	147¼	.....	.....	563,000

The very regular and uniform results given in this table, show that by the use of burnt lime the consumption of coke for every 100 kilogrms. of raw iron was reduced by 14 to 15¼ kilogrms., while at the same time the production of iron increased within a certain period as much as 22 or 24 per cent.

Hitherto the opinion of metallurgists with regard to the use of burnt lime was rather unfavorable than otherwise; but since the above experiments were made at Ougrée, it has been employed with good results in England and Wales, among other places at Abershyne, where the results obtained were still more satisfactory than at Ougrée, inasmuch as the saving of coke affected by this means amounted to 13 kilogrms. for every 100 kilogrms. of limestone which was replaced by 63 kilogrms. of burnt lime.

New lime-kilns have recently been built at Ougrée; burnt lime has been employed there two years and a half, and with uniform results, for which reason the authors recommend its general application, from a thorough conviction of the advantage to be gained. The entire saving, inclusive of the expense of burning the limestone, is stated by them to amount to 30,000 francs annually for each furnace. — [*Zeitschrift des oesterr. Ingenieurvereines*, 1852, p. 145–150. Translated for the Polytechnic Journal.

THE IRON MANUFACTURE OF GREAT BRITAIN.

The produce of the iron manufacture of Great Britain in 1750, was only about 30,000 tons; in 1800 it had increased to 180,000 tons; in 1825 to 600,000; and in 1832 the product of pig-iron was estimated at 2,701,000 tons. This estimate of the yield was made only upon those furnaces in blast, as follows:—

	Furnaces. In.	Out.	Total.	Pig Iron. Tons.
Scotland	113	31	144	775,000
South Wales	135	27	152	635,000
Ditto Anthracite	12	23	35	31,000
South Staffordshire	127	32	159	725,000
North Staffordshire	17	4	21	90,000
North Wales	6	7	13	30,000
Shropshire	27	13	40	120,000
Durham	18	8	26	110,000
Northumberland	7	6	13	35,000
Yorkshire and Derbyshire	35	7	42	150,000
Total	497	158	645	2,701,000

The shipments of pig iron from Scotland to the United States for the last seven years, have been as follows:—

1846	13,918 tons	1850	57,509 tons
1847	44,994 "	1851	80,019 "
1848	90,235 "	1852	100,700 "
1849	94,212 "		

The shipments of manufactured iron from Liverpool to New-York, Boston and Philadelphia during the last seven years, have been as follows:—

	Rails. Tons.	Bars, &c. Tons.	Hoops, &c. Tons.	Total. Tons.
1846	12,514	12,807	1,686	27,007
1847	12,635	37,543	7,195	57,373
1848	50,188	33,621	7,237	94,046
1849	33,849	57,136	13,203	104,187
1850	29,808	66,338	19,486	115,632
1851	78,199	64,301	19,293	161,793
1852	74,468	72,064	22,196	168,728

Of which during the year 1852, New York received 135,290 tons, Boston 24,414 tons, and Philadelphia the balance.

MANUFACTURE OF WROUGHT-IRON DIRECT FROM THE ORE.

A brief report was made in the last number of the *Mining Magazine* (Vol. I. No. 2) respecting the establishment of Messrs. Davis of Cincinnati, for the manufacture of wrought-iron direct from the ore. The process adopted is that of James Renton, of Newark, New Jersey. The ore is taken in its raw state, and after being stamped, and prepared by an admixture of carbon, it is put in a series of close tubes, placed in a chamber, the outer surface of the tubes being exposed to the waste heat of the furnace for several hours, when it is sufficiently deoxydized. It is then discharged, as required, into the furnace, where it is readily worked up into balls weighing about one hundred pounds, and taken to

the hammer, averaging two balls every hour. The process is continuous and uniform.

A company with a large capital has been successfully carrying on this process at Newark for a considerable time. Their iron has been introduced for manufactures, and with high commendation. We have seen their works in operation.

The cheapness of the process is worthy of attention. The following is a statement of the cost of a ton of blooms at Newark, with one furnace:—

From two to two and a half tons of ore, at $4 ..	$10 00
One and a half tons of coal, at $4,25	6 38
Puddling and welding, per ton	5 00
Hammering	1 50
Labor	3 00
Coal for carbon	1 25
Half ton of coal for engine. at $4	2 00
Making the cost of a ton of blooms about	$29 63

Any description of fuel—wood or coal, both anthracite and bituminous, can be employed for heating the furnace, and with nearly equal advantage.

Article III.

Address of John H. Lathrop, LL. D., Chancellor of the University of Wisconsin, before the State Agricultural Society.

Mr. President, and Gentlemen of the State Agricultural Society:

The extreme division of labor and of employments, concerned in the production of material wealth, by reason of which a greatly multiplied population is sustained at a far more elevated standard of enjoyment and of culture, both of body and of mind, is the distinction of modern civilization.

Indeed, all civilization implies a departure from the personal isolation and independence of the purely savage state—it implies social arrangement and classification, fitted more or less discreetly to the production of proposed social ends; be those ends political or economical—and the character as well as the permanence of the system, depends, ultimately and properly, on the adaptation of its arrangements to the real and permanent wants of men—on the wisdom of its means, and the benevolence of its ends.

In most of the ancient forms of civilization, the artificial arrangements of society were for the benefit of a governing body, who wielded the civil power, and directed the military arm of the State, while the labor which sustained the whole, was fixed in its position at the base of the social pyramid, by the hereditary disabilities of caste; or under the more crushing weight of territorial serfdom, or of domestic servitude.

Under social conditions like these, which divorced the intellect of the State from its productive arm, there is no ground for surprise at the brilliant results wrought out by the governing mind, in an Egyptian, a Greek, or a Roman civilization.

We might expect to see, as we do see, the Fine Arts approximating towards the perfect ideal of the beautiful and the grand—the breathing marble, the column with its lofty capital, surmounted by the dome and the arch.

It is not strange that the free intellect of the happily born should have luxuriated in the attractive field of the liberal sciences, guiltless of any intended bearings on the useful or the practical; that geometry and astronomy had their votaries; that music, statuary and painting had their triumphs; that a literature should have sprung into being, recording the utterings of the genius of history, the inspirations of the poetic muse; and the profounder, though scarcely less imaginative speculations, of a metaphysical philosophy.

It is not strange that eloquence should have poured its full tide from the Bema and the Rostrum—or that "the pride, the pomp and circumstance of glorious war," should have fired many a gifted mind with the strange ambition, to swell the catalogues of those who have lived only to desolate and to destroy.

But while the Liberal Arts were thus expanding into being through the irrepressible energy of the free and the governing mind, unincumbered, as it was, by the burden of productive toil; the USEFUL ARTS, inspired by no such living energy, abandoned to the practice of those whose adequate qualification was deemed to be the strong arm, the bowed and submissive spirit, and the unfurnished head, were destined to no corresponding development.

Roman history hands down to us, indeed, one Cincinnatus, who soiled his patrician fingers with the touch of the plough—but, though careful to record his military glories, fails to inform us that Agriculture was at all benefitted by the contact. In the light of the present age, I am afraid we must set down the fabled Triptolemus as a very poor farmer; the Cyclops as indifferent blacksmiths; and even Dædalus himself, not very much of a mechanic.

Under such conditions of the social system, political and economical, was constructed that high wall and deep ditch, which for long centuries of duration, and through various phases of society, continued to separate, broadly and invidiously, the Liberal from the Useful Arts—and I need not add that the traces of this discrimination are not yet obliterated. There lingers in our midst even yet, such a thing as professional pride; as traditional disdain of the industrial avocations—the tattered remains of that robe of disparagement, which once shrouded the manly form, and embarrassed the strong arm of brown industry.

But it is the glory of modern civilization, that its tendency is to exalt every social valley; to bring down from its pride of elevation, every mountain of privilege; to demolish every wall of partition between the Liberal and Useful Arts: to shed the light of Science on the industrial processes, and to bring all the honest avocations of men, productive of social and individual good, into harmonious and efficient action. It proposes, ultimately and for ever, to do away with every social distinction dependent on birth, class, or employment—and while it will multiply incalculably the aggregate amount of good wrought out by the improved mechanism of human society, it proposes to throw the good thus elaborated open to equal and honorable competition; and to make the share each may vindicate to himself to depend, not as under the older forms of civilization, on the birth, rank, or calling of the individual, but on his personal character, and personal merit—on his precise individual value in the social system.

In order to fix the destined position, the value, and the duties of the AGRICULTURIST, in the economy of society, it will be needful to glance at the interior mechanism of modern civilization.

"In the sweat of thy face shalt thou eat thy bread," is the Scriptural annunciation of the great law of humanity, that LABOR is necessary to the acquisition and enjoyment of physical, intellectual, or moral good.

The resulting good, however, depends on the degree of wisdom with which human industry is directed.

The earth is capable of sustaining but a sparse population, and that at a low standard of physical comfort, as well as of intellectual and moral culture, where the labor of each individual is directed to the supply of precisely those articles, and those only, which meet his own wants.

In the aspects of modern civilization, on the other hand, as has been already hinted, nothing is more characteristic than the very dense population which the earth is able to sustain, at a vastly more exalted standard of physical comfort, and a still higher standard of intellectual and moral cultivation; and nothing is more essential to the introduction of those invaluable results, than that DIVISION OF LABOR AND OF EMPLOYMENTS, which we observe to obtain in all civilized com-

munities, with a minuteness and distinctness, corresponding exactly with the type and the degree of the civilization which there prevails.

In the production of material wealth, in its thousand departments, AGRICULTURAL and MANUFACTURING, by confining skilled labor to its habitual and well known processes, the aggregate product of human industry destined to the supply of human wants, is increased beyond calculation, and time is saved, and means furnished to the individual, for the purposes of intellectual, moral and social improvement.

But, again; the division of employments in the various departments of the Agricultural and Mechanic Arts, begets the necessity of EXCHANGE—and if each producer were bound to effect his own exchanges, at home and abroad, a large portion of his time and means would be consumed, and a large amount be thus substracted from the aggregate production of the community.

By separating, then, the business of exchanges from the business of production—by setting up the class of merchants—the producer is no longer withdrawn from the creation of values—the increase in the aggregate production of the community pays, in the shape of commercial profits, for the skilled labor of the mercantile profession—leaving a balance in the hands of producers far exceeding their whole production, provided they turn aside to act the merchant for themselves—the physical wants of all are better supplied, and time and means are furnished for an advanced stage of intellectual and moral cultivation.

But our economical analysis of society may be carried still further. In order to the greatest aggregate production of physical values, the health of the producing and the exchanging classes, including all ages and conditions, must be provided for, and thus a demand is created for skilled labor in the HEALING ART. But if each individual were bound to acquire this skill for himself, and to seek out and compound his own simples, production must be suspended the while; the skill comes too late; the race is dying out, not only of disease, but of starvation. It is sound economy, therefore, to sustain a medical profession, as a distinct and independent employment—for the consequent enlargement of the aggregate wealth of the community, will pay the charges of the profession, leaving the producer with ampler means, and sounder health, and unbroken time, to provide, not only for the gratification of his physical wants, but also for the more exalted purposes of his being

But, again; it is essential to the progress of a community in physical wealth, and other forms of social well-being, that the rights of men in the civil state, should be ascertained, declared, defended, and vindicated; and the call for skilled labor in this department must be met, or the law of the strongest will prevail; violence will take the place of social order, and civilization is at an end.

Shall this call for skilled labor in the LAW, be met by each producer for himself? Or is it sound economy that he should meet it by Attorney? That a profession of those learned in the law should be sustained, to do that service which the individual cannot do for himself without ruinous neglect of the processes of production and exchange? Civilization and economy return their united answer, that the Bar must be sustained as a distinct and independent profession.

Again; that righteousness exalteth a nation, is the scriptural announciation of the general principle, that the sentiments of reciprocity and benevolence, pervading the common mind, constitute the broad and deep foundation on which reposes the structure of civil society. The sentiment of justice, pervading the common mind, gives to beneficent legislation its vitality and its strength: it lies at the foundation of the right of property: without it, production and accumulation are at an end, and civilization is but an empty name.

How divinely then is the PULPIT adapted to imbue the common mind with that righteousness which exalteth a nation. It inculcates a perfect rule of life, the fountain of all just legislation; and what is vastly more important, it enforces that rule, not like the human legislator, by sanctions drawn from this present life only, but by those which respect our immortal being, our relations to GOD, the Judge of all, and to the community of spiritual intelligence throughout eternal ages—the sanctions, namely, of the Christian faith, without which, as the experience of man, in all ages has shown, the best constituted and most perfectly balanced social structures have tended uniformly to decay and dissolution.

These ministrations of the pulpit require skilled labor. Sound policy and sound economy therefore demand that these ministrations be committed to the clergy, as a distinct and independent profession. Give thyself *wholly* to these things, is the apostolic injunction.

Such is a very brief analysis of the economy of civilized society, as we now see it.

The producing classes, throughout the various subdivisions of the agricultural and mechanic arts, create all the values destined to the supply of the physical wants, and to the gratification of the tastes of the whole community.

The mercantile classes produce nothing; but by transfer and exchange make such a disposition of existing products, as to benefit producers, to enlarge the volume of production, and minister to the well being of all.

The professions, strictly so called, terminate their industrial processes, not on physical products, but on those conditions of society, which give to producing and exchanging agents the power and the disposition to contribute in the highest degree to the general good, and to their own profit, through the more efficient and beneficial action of the various industrial agencies. The results of professional labor, are the *health*, the *order*, and the *morality* of the community.

But there is another element in modern civilization, which our analysis has not yet reached, whose office it is to qualify, and mould and fashion all the rest —I mean the great work of FREE and UNIVERSAL EDUCATION.

The agency of the educator terminates not on physical products, nor yet directly on social conditions, but on the MAN HIMSELF. His raw material is the young mind, the unformed intellect of the community. His resulting product is the finished man, prepared by varied knowledge and intellectual discipline, to act well his part, as an agriculturist, as an artizan, as a merchant, as a physician, as a lawyer, as a divine; to be useful in the varied relations of private life; useful in the civil state, and in those more exalted relations, which concern him as a member of the human family, and a subject of the universal empire of GOD.

It is quite obvious, then, that the educator, whether of the school or the press, stands at the point of power, and applies the moving force to the mechanism of human society. For the successful action of this mechanism, intelligence is necessary at every point—on the farm, in the manufactory, in the counting-house, in the practice of the healing art, at the bar, and in the sacred desk.

There is not a single employment, within the scope of our economical analysis of society, whose results would not be rendered, by an increase of intelligence, more beneficial to the community, and more honorable and profitable to the industrial agents concerned in it. Reason teaches us, that the communities which are the better educated at every point, must be the more wealthy, the more powerful, as well as the more respectable.

The experience of the civilized world abundantly verifies this conclusion. We see that the more intelligent the industrial agents, the more ample and valuable the resulting production, throughout the whole economy of society.

The way is now prepared, to state with more distinctness, the nature, position, and office-work of AGRICULTURE in the social economy.

In the beginning, man was alone with Nature. Without arts, without capital, without implements, he took his sustenance from the bosom of the earth, as the common mother of the race.

Agriculture, in the most restricted signification of the term, implies a departure from this condition. Man was sent into the world with a commission, not merely to share with his fellow animals, the spontaneous productions of nature, but with a charge to search out the physical elements, to determine their capabilities—to make the needful combinations—to bring into action their productive powers, not only to supply the animal wants, and minister to the pleasures of his organic nature, but to render them tributary to his intellectual, moral, and social development, and his ultimate spiritual elevation and well being.

In the discharge of this great commission, every avocation of man has its work to perform. It is the province of Agriculture to begin the process, by the tilling of the ground, as the term imports—by stimulating and guiding the productive energies of the physical elements to results infinitely transcending, in quantity and quality, the yield of these same elements, unaided by human agency.

The gross results of Agriculture constitute, what, in the language of economy, is denominated *raw material;* and they are so called, precisely because, with almost the single exception of fruits and green vegetables, material products do not come from the hands of the agriculturist, prepared for human use. They are gross and incomplete, the proper material which the Arts are to take, and to mould and fashion into forms of utility and beauty, adapted in the finished state, to the satisfaction of the physical wants, and the gratification of the tastes of men.

In the three great classes of our physical wants, food, clothing, and shelter, few indeed are the commodities which come from the hands of the Agriculturist ready for the consumer!

Men want not wheat, but bread—therefore the CROP, as raw material, must be subjected to the manufacturing processes of the miller and the baker.

Men want not wool, but clothes—therefore the fleece must undergo successive changes, in the hands of the carder, the spinner, the weaver, the fuller, and the dyer, before it reappears in the form of cloth. And what does the cloth avail, till the tailor, with his divine art, finishes—the man.

So men want not timber or stone, but houses, barns, ships, temples of education, and temples of religion; and here, again, the yield of the Agriculturist must be subjected to the almost numberless manufacturing processes, of masonry and architecture.

It is obvious to remark, therefore, that it is the distinction of Agriculture, that it furnishes the material for all the manufacturing and exchanging processes—that there is nothing in the hands of the Artizan, or the Merchant, that has not been in the hands of the Farmer. Agriculture thus lies at the foundation of the economical structure of society.

But it is entirely proper here, to submit the caution, that too much of relative dignity and importance must not be assumed to Agriculture, in consequence of this distinction. To him who enjoys the final product, the initial, the medial, and the finishing processes, are all equally important.

It is true, that without the raw material furnished by the Agriculturist, the occupation of the Artizan, and the Merchant, is gone for ever. But without the processes of art and of exchange, without the Merchant and the Artizan, what would be the value of the raw material? Would it be produced at all? It is true, that the structure cannot stand without the foundation. But what is the value of the foundation, if no superstructure is to be erected upon it? Would the foundation be laid at all?

It is no disparagement to Agriculture, that it cannot say to Manufacture, I have no need of thee. It is no disparagement to both, that they cannot say to Commerce, We have no need of thee. Neither is it any disparagement of these three great industrial interests of society, that they cannot say to the Professions, We have no need of you. Nor yet, does it disparage all these—aye, it ennobles them all—that they cannot say to Education, We have no need of thee.

The truth is, we are members, one of another, with mutual uses and dependencies. As in the natural body, so there is a divine harmony running through the whole structure of the body economical. One member cannot suffer without all the other members suffer with it.

But to elaborate this thought more thoroughly and minutely:

I. Agriculture is interested in the prosperity and improvement of the manufacturing interest throughout the whole circle of the Useful Arts:

In the first place, manufacture takes the raw material of Agriculture, and Agriculture takes in return the perfected product of manufacture. A commercial process may intervene: but the essence of the whole transaction between Agriculture and Manufacture is, when completed, a barter of the products of the one for the products of the other. The existence of the Arts, creates a demand for the products of the farm. Were all men agriculturists, the market would disappear, and the surplus of the farmer would lose its exchangeable value. As the number and the prosperity of those interested in the manufacturing and mechanic arts increases, the demand enlarges, and remunerating prices of Agricultural products reward the industry and skill of the farmer.

But not only does the farmer thus secure the advantage of an intenser demand for his own surplus, but the prosperity of the Arts is attended with new applications of Science, the introduction of new machinery, the more minute and methodical division of labor, and a greatly increased facility and skill in the executive processes. All this works a saving in the cost of production, and a diminution of the price of the manufactured article to the Agricultural consumer. The prosperity of the Arts, therefore, works a double advantage to the farmer in the intenser demand for his own surplus, and a greatly enlarged reward in the shape of finished products, which he is able to command in return for it—in the enhanced value of the raw material on the one hand, and the reduced price of the perfected article on the other.

But again, the progress of discovery and improvement in the Arts, and the increased demand for raw material, is sure to regenerate Agriculture itself, by

prompting to a broader and deeper cultivation, by the introduction of new articles of produce; by stimulating to the adoption of more approved processes, and to new combinations of the physical elements—to a more judicious division and methodical arrangement of the different departments of field labor, to greater facility and skill in all the executive operations, and finally to the habitual improvement of Agricultural implements, from the most simple to the most complicated, until the farm comes to vie with the shop itself, in the number of its inventions, and the perfection and productive power of its mechanism.

It is in perfect accordance with these views, that England, transcending all other nations in the variety and perfection of her Arts, is unrivalled in her Agriculture. It is an equally apt illustration of the truth of our doctrine, that Poland, an annual exporter of grain, but without Arts, is the poorest country of Europe.

In the early settlement of wild tracts of the earth's surface, by the aggressive march of civilisation, Agriculture is not only the dominant interest, but from the nature of the case, it may be said to be almost the only interest.

In such conditions, it has not unfrequently happened, that the Agricultural habit and sentiment have been so exclusively and intensely cherished, as to amount to a sort of economical bigotry, scarcely tolerant of the introduction of a disturbing social element, in the form of Manufactures and the Arts. Some of the planting States of this Union have hugged themselves into poverty, while sneering at the "lords of the power loom and the spinning jenny."

Georgia, the banner State of the South, is nobly redeeming herself from the thraldom of this sentiment. The loom and the spindle have already brought her into honorable competition with the industrial agencies of the North, and are awakening her AGRICULTURE to an energy and a thrift, which follow only in the train of Art.

Let me say, then, to the Farmers of Wisconsin, whose voice is potential in the councils of the State, that they can confer no greater boon on Agriculture, than to invite the Arts in all their variety, to come and make their permanent abode in our midst. By a system of liberal, just, and wise legislation, affording facilities for permanent investment, closing the avenues to fraud, and enforcing rigidly the performance of contracts, manufacturing capital will be induced to break away from its moorings abroad, and come and cast anchor, without distrust, upon our shores.

Agriculture could do nothing more suicidal, nothing more calculated to retard the growth and maturity of Wisconsin, than to countenance that narrow policy which would deny to capital, on our own ground, that facility of combination and that permanance of arrangement, which long experience, elsewhere, has demonstrated to be needful to the full and profitable development of the useful Arts.

II. The proposition next in order, in the discussion of this part of the subject, is, that Agriculture, in common with the Arts, is interested in the prosperity of Commerce.

It is a fact easily apprehended, that all the items of physical wealth, that is, all produced values, are the results of Agricultural and Manufacturing agency. Agriculture and Manufacture cover the whole ground of the production of values.

But the extreme division of labor and of employments, the secret of the stupendous production of modern times, begets the necessity of an extended system of *exchanges*, for the mutual benefit of the producers: and owing to the different and sometimes distant localities of production, *transportation* for the most part precedes exchange.

To effect this transportation and exchange—to take commodities from the hands of the producer, and place them in the hands of the consumer—is the precise office work of Commerce. Of the whole produced value of Agriculture and Manufacture, Commerce then, must take to itself that share which is, on an average, a fair remuneration for this service; leaving in the hands of producers a balance far exceeding in amount and value their whole production, provided the produders were obliged to effect transportation and exchanges for themselves.

But, although on the principle of the division of labor and of employments, the setting up of the mercantile class, thus re-acts upon production, enlarging its volume, and enriching the producers themselves; still, it is an ultimate and fixed fact, which ought to be distinctly understood, that Commerce is a CHARGE on Agriculture and Manufacture—that the whole cost of the commercial machinery

must withdraw just so much of the gross value produced, from the hands of the producer.

If the commercial processes be clumsily and expensively performed, the producer suffers; he retains less of his value produced, and is so far forth less prosperous.

If the commercial processes be skilfully, expeditiously and cheaply performed, the producer has the benefit of it; he retains more of his value produced, and is so far forth more prosperous.

The manifest inference is, that the Farmer is interested in every improvement of the commercial processes, which will diminish the expenses of transportation and exchange—as truly so as he is in those improvements in manufacture which diminish the cost of production.

The improvements in ocean navigation, costly as the steamship is, by cheapening freights, are enriching producers on both sides of the Atlantic.

The immense array of steamboats which float upon our inland waters, as a part of the machinery of our internal trade, with their frequent loss, and destruction of property, would seem to constitute an enormous charge upon the industrial interests of the country.

But to banish steam from our lakes and rivers, and to return to the raft and flat boat, and other forms of the time consuming, and labor consuming navigation of the last half century, would be to impoverish and desolate the interior—for the simple reason that the enormous amount of our present lake and river trade, far transcending our foreign commerce, could not be carried by a craft like that of the past generation, without a tenfold expenditure of time, labor and money—and at whose charge? At the charge of the producer.

If the produce of the Farmer should go forward to market, the compensation of the commercial agency would absorb the whole value, leaving no balance for the producer. If the manufactured commodities necessary to meet the wants of civilized men, were brought into the interior from the commercial mart, they would come to the cultivator of the ground at a price which would place them essentially beyond his reach.

It is obvious enough, that under such conditions, production and trade would fall together, and a greatly reduced standard of enjoyment and civilization would prevail throughout a sparsely populated interior.

Without the steamboat, what would have been the condition of the great basin of the St. Lawrence, and of the great valley of the Mississippi, on this very day? Well assured am I, that the last track of the moccasin would not have disappeared from the ground where we are now standing, surrounded by the emblems and the garniture of civilization.

Again; canals and railroads, constitute now, a great part of the commercial machinery of modern civilization, transporting a large and annually increasing portion of the travel and the merchandize of the whole country.

When we contemplate the vast extent of this net-work of internal improvement, the stupendous expense of the construction, and the corresponding outlay for the motive power, for the boat and car; and the more especially, when we sum up into one great aggregate, the annual receipts of the system, of which aggregate the Erie canal alone furnishes a yearly item of more than $3,000,000, well may we wonder at the miracle, that the shoulders of Agriculture and Manufacture are broad enough to sustain, uncrushed and unbent, the whole burden of the charge.

And yet they do sustain it. Not a dollar of freight goes into the treasury of these improvements, which is not taken from the produced values of those who are ultimately the mutual parties interested in the exchange, and in the consumption of the commodities transported. The gross values of the producer are diminished, aye, *taxed*, if you please, to this amount—and the farmer pays his portion of the TAX. But is he oppressed by it?

If the farmer of Western New York thinks so, let him by all means eschew the canal and the railroad—he is under no compulsion to use them—let him call up from an unbroken slumber of a quarter of a century, the teaming gear of his older brother; let him haul his agricultural surplus to the good old Albany of his brother's recollection, and his domestic stores back again to his home; and let him, on the next rainy day, sit down and reckon up his savings. How will his tax account stand then? Why, gentlemen, the penny wisdom and pound folly of such a farmer, would be the scoff and the jeer of his neighborhood.

And what shall we say of the economy and thrift of a State, which, by constitutional provisions incapacitates itself from fostering, encouraging, and aiding works of the most manifest utility, and of the very greatest importance to the prosperity of the farmer—and by its jurisprudence and general course of policy, so relaxes the obligation of contracts, as to render foreign capital too distrustful of individual and company securities to answer the loud call of the suffering producers, "come over and help us."

The permanent economical benefit of the canal and railroad to the farmer, is three fold:—1. In consequence of the reduction of freight, his produce is worth more on his farm.—2. The merchandize which he needs costs less at his own door, for the same reason.—And 3. Because the commercial agency thus takes away a smaller portion of his produced values, leaving a larger balance in his hands, he is affected precisely as if his land had become more productive; therefore his real estate rises in value.

The importance of this last item of advantage may be illustrated by a single case. The Erie canal cost originally $10,000,000. A rise of two dollars per acre, throughout a border of both banks of the canal, thirteen miles wide, would cover the whole cost of construction!—and where is the acre of feasible land within those limits, which is not worth, to-day, five, ten, fifteen, perhaps twenty dollars more, than if the work were undone?

Perhaps you will say, if this be so, the farmers of New York could have afforded to construct the canal themselves.—And so they might. But had they the needful information? Had they the unanimity, the confidence, the courage, the capital, or the credit to command the capital? Could any voluntary company have been formed, with the adequate courage, and capital and credit, to grapple successfully with the gigantic difficulties of the work?

No, Gentlemen,—had not the energies—the capital—and the credit of the STATE, been enlisted and consecrated, in trembling hope, to the accomplishment of the then unparalleled enterprise, it would have remained probably unattempted, certainly unaccomplished, down to the present day.

And it was the genius of CLINTON, that inspired this trembling hope—that nursed it into firm resolve—that bore aloft that firm resolve, high above the opposition of the trading politician, the scoff of the blasphemer, and the ridicule of the sceptic, to a magnificent and triumphant completion. While thus engraving his own memorial, in a long line of glory, on the soil of his native State, he was making his mark on the age. The power of his great example was felt throughout the length and breadth of the land. The din of improvement, in its progress, has been extending from State to State, awakening Agriculture to a new life and a new thrift, till there is scarce a hill top in our country, whose horizon does not bear some testimony to the beneficence of the far-reaching policy of Clinton, and whose weary industry has not been cheered and refreshed by the shadow of his great name.

But who will say that the Erie and Champlain canals were more important to the trade of New York and the great basin of the St. Lawrence, in 1816, than the Milwaukee and Mississippi, and the Rock River railroads are, at this moment, to the trade of Wisconsin and of the vallies of the Upper Mississippi, the Upper Missouri, and the Red River of the North.

And who will say that what was wisdom in New York then, would be folly in Wisconsin now? Where, then, is the Clinton of Wisconsin? And do the barriers of your constitution send back a cheerless echo to the voice of your inquiry?

Farmers of Wisconsin! you CANNOT AFFORD to let these great enterprises languish and die. If private credit cannot SEASONABLY build the roads, public credit can. Your potential voice makes the laws; it makes constitutions—aye, and unmakes them too. I do not say that you can find a Clinton—such a man is God's benison on an age—but you have the roads. Where there is an IRON WILL, there is an IRON WAY!

But again; Agriculture is not only interested in the reduction of the cost of the *transportation* of commodities, but is equally so in cheapening that other operation of commerce denoted by the term of *exchange*.

The most obvious mode of effecting exchanges is, of course, by the direct barter of the one commodity for the other. But one difficulty in the way of barter as a system of exchanges is, that commodities or products, are not mutually and universally receivable.

For example, the shoemaker wants a coat, but the tailor does not want shoes. Perhaps the shoes may be bartered for hats, but the tailor does not want hats.—Perhaps the shoes may be bartered for corn, but the tailor does not want corn. And there is no predicting the number of exchanges, and the waste of time necessary to enable the shoemaker to find some commodity which he can barter for the cost.

The difficulty lies in bringing together parties who will be mutually benefitted by the barter. And this difficulty becomes aggravated by every step of advancement in the division of labor and of employments.

Barter, then, is obviously compatible, only with a low state of civilization, and the necessity is early suggested, of providing some commodity which shall be universally receivable, which the producer may obtain, directly, for his surplus, and with which he may obtain directly, the commodity which he needs; and thus enable him to remedy the difficulty in question and diminish the expense of barter. Such a commodity is MONEY—it is universally receivable.

There is another difficulty with respect to barter, which requires to be stated, in this connexion; that, namely, of adjusting to each other the values to be exchanged. The farmer, for example, takes his horse to market, desirous of receiving in return various articles of smaller value, in the hands of different individuals. As the horse cannot, from the nature of the case, be bartered, a part here, and a part there, the series of transactions is altogether impracticable.

The commodity money, then, in order to do away with the inconveniences and the impossibilities of barter, must, in addition to the fact of being universally receivable, be capable of division and subdivision, so as to adjust it to all possible values.

Gold and Silver coin embodying these two qualities of universal receivability, and divisibility at will, has been adopted, by common consent, and the action of civil governments, as the money of the commercial world; and is as distinctly a *part of the machinery of commerce*, as is the railroad or the steamboat.

It is the office of the railroad, to facilitate and cheapen transportation, and this constitutes its whole value as a railroad; so it is the office of coined money to facilitate and cheapen exchanges, and this constitutes its whole value as money. Were barter entirely convenient and economical, money would have no office to perform—no necessity would have suggested its creation—its presence in the business of the world be without meaning—it would never have been thought of.

But when we consider that the exchanges of this country require a currency of some $300,000,000, and that the annual charge for this expensive commercial agent is the yearly interest of this sum, with the addition of the annual cost of the coinage, the loss by wear, by shipwreck and otherwise, well may it be asked again, are the shoulders of Agriculture and Manufacture broad enough to sustain the burden of this charge.

The answer is at hand: they certainly do sustain it—and that, with incalculable advantage and profit to the producer. For the simple reason that money, although itself an expensive agent, so facilitates and cheapens exchanges, as to relieve agriculture and manufacture from the far greater cost of making those same exchanges through the time consuming and labor consuming processes of barter.

The cost of the medium is, if you please, a *tax* on the producers of value, and the farmer pays his portion of the tax—but he finds a manifold compensation, in the relief from the incalculably greater tax, which the system of barter would entail upon him.

Enough has now been said on the part that money plays in the phenomena of commercial exchanges, to prepare the way for the proper understanding the assertion, that the farmers of Wisconsin, as well as the farmers every where, are deeply interested in setting up and maintaining that form of the circulating medium which will work the greatest reduction of the cost of the whole commercial machinery, and all the operations of trade.

Metallic money facilitates exchanges, obviates the inconveniences of barter, and cheapens the commercial processes; it is sound economy, therefore, for producers to introduce and maintain a large and costly volume of metallic money.

If a currency of representative values will facilitate exchanges in a still higher degree, will obviate the inconveniencs of metallic money, and cheapen still further the commercial processes, it will be equally good economy for producers

to set up, for the use of commerce, a currency of representative values, with all the safeguards suggested by the experience of the past.

And this brings us to the precise question to be submitted, at the coming election, to the people of Wisconsin—a question, of no trifling interest to the farmers of the State.

If it be true, that the merchant can serve you more economically with a currency of representative values, than with the agency of metallic money, then, if you compel the merchant to use the latter, he must idemnify himself by paying less for your produce, and charging more for the merchandize he sells you. If you allow him the use of the former, he will be able to pay you more for your produce, and will charge less for merchandize.

If this be so, the policy that would send you back from a currency of convertible paper, to a pure metallic circulation, would send you back from the railroad to the turnpike, and from the steamboat to the sloop, or the flat boat. Do you say that the paper currency has its risks and its losses?—so has the steamboat.

The inquiry which lies at the bottom of all these cases is, whether the alleged improvement does, or does not, in point of fact, after allowing for all its unavoidable imperfections, work a diminution of the cost of the commercial machinery. If it does, the saving enures to the benefit of the producer, just as surely as a stone in mid air falls to the ground—and the farmer has his full share of the benefit.

As the time and occasion do not permit me to state my views, fully, on the currency question here presented, I shall not enter upon its discussion at all. I only present the naked point on which the whole question turns, and leave the decision where the Constitution leaves it—with the people.

Farmers of Wisconsin! On the question of authorizing the issue, within the State, of a currency of representative values, if you believe that the introduction of the proposed system with the proper safeguards will facilitate and cheapen the processes of trade, and thus enable you to do your whole commercial business at less cost to yourselves, you will, at the approaching election say AYE—if you do not believe this, you will say NAY. It is a question of great import to Wisconsin. God grant that you may decide the question wisely.

But again, Agriculture is interested in the growth and prosperity of large towns.

A town or city may be regarded, philosophically, as a part of the business machinery of the country. It is, in part, a manufacturing agent, and in part a commercial agent. In both these capacities, it enjoys such a concentration of capital, enterprize, and intelligence, as to ensure the economical advantages of a minute division of labor, the perfection of the executive processes, and all the helps attendant on the invention and skillful use of machinery.

All these larger operations of manufacture and trade are carried on at immense advantage over the smaller; but if the laws favor the association of the smaller capitalists by general acts of incorporation, there is no danger of monopoly. The principle of competition is more active in the large town, and the consumer will have the benefit of the diminution of the cost of the manufactured article, and of merchandize generally.

For this consumption, however, without which the large town cannot exist, it looks to the country, that is, in the main, to the agricultural producer. The town and the country are mutually markets to each other, and the *citizen* is as much interested to penetrate the interior with canals and railroads, as the *farmer* is to find these avenues for the transportation of his produce to the mart. We present interests here that are not antagonistical, but are mutual and harmonious. The town thrives by the growth and prosperity of the country, and the country by the growth and prosperity of the town.

All this is manifest—and yet it is no more strange than true that in some agricultural communities, there has sprung up a narrow jealousy of the town, grudging its prosperity, ripening into settled hostility—tainting, perhaps, the legislation of the State, by unequal taxation, and by denial of those facilities of production and trade, which are essential to the healthy development of the town.

Farmers of Wisconsin! the towns which line your borders, and dot the interior, live not for themselves alone, but for you—they grow with your growth—they are your credit abroad, and your profit at home. An enlightened self interest, on your part, demands that your policy towards them shall be conceived in a liberal and comprehensive spirit.

The railroad is a swift witness of the identity of the reciprocal interests of town and country. It brings the rural districts under the very gates of the city; and it lodges the merchant and artizan at home, scores of miles, perhaps, from the scene of his daily toil. This indefinite expansion of towns, with their capital, intelligence and enterprise—this amalgamation, as it were, of the city and the country, is destined to play, henceforth, a distinguished part in the advancement of civilization.

III. But once more. Agriculture in common with Manufactures and Commerce, is interested in the prosperity of the Professions.

It is conceded that the sustaining of the professions is a charge on the producers of value.—But it is also to be conceded, that without the agency of the professions—without the sound social conditions of HEALTH, ORDER and MORALITY, production would be at an end. So much for the mere economical argument.

But when we consider the intrinsic importance of these social conditions themselves, we can hardly over-estimate the obligations of productive agency to professional service. Here, as in the arts and in commerce, "Live and let live," is a maxim addressed not so much to the magnanimity and generosity, as to the economical and social interest of the cultivators of the ground.

But without extending our argument farther, the general proposition, that agriculture is benefitted by the advancement of every other interest essential to civilization, has, I would hope, been satisfactorily demonstrated.

That every other element in the economy of society, is reciprocally interested in the prosperity of agriculture, has been made, at least, equally apparent in the course of the argument.

To lay down the additional proposition, that agriculture is interested in the improvement and perfection of its own processes, might seem to be the superfluous statement of a mere truism.

Every farmer with a given amount of land, capital and labor, looks to his gross produce, as the proper return for his outlay—and on the volume and quality of this produce, depends his ability to command and to enjoy for himself and those dependent on him, the productions of the Arts, and the services of the professions. Every agricultural improvement looks to the larger *quantity*, or the better *quality* of the product. To promote these two ends is, of course, the more obvious and direct object of your association.

Having thus unfolded to you some of the outside relations of the great calling of the farmer, I gladly leave this important interior field to those who shall succeed me in addressing you on occasion of your future anniversaries, and who will bring to the task a knowledge of the theory and practice of Agriculture which I cannot pretend to.

I will, however, before closing, venture to call your attention to a few topics connected with this part of the subject.

In the first place, it is a truth that will become evident on a little reflection, that the division of labor cannot be profitably carried to the same extent in Agriculture, as in Manufacture. In the larger establishments we are told, there are ten distinct processes in the manufacture of the pin, each of which may employ the labor of its man, from one year's end to another. But not so with the processes of Agriculture.—One cannot plough throughout the year, and another sow, and another make hay.

But, on the other hand, there are certain classifications of the greater operations of husbandry. We hear, for example, of stock farms, dairy farms, grain culture, and the planting interest, comprising the subdivisions of the growing of tobacco, of cotton, of rice, and of the cane.

I take it to be sound dostrine in this connexion, that large tracts of country should not confine themselves to any one of these forms of husbandry—for a failure of the staple produce for a single season, would occasion unmitigated distress to the agricultural class, and affect disastrously all collateral interests of the district.

The partial failure of the wheat crop of two or three seasons past, furnishes an illustration of this truth, the force of which is felt by the farmers of Wisconsin, sufficiently to admonish them of the expediency of extending the cultivation of corn, of oats, of barley, of flax, and other annual products—of introducing extensively stock raising, dairy, and wool growing, to all which uses the soil and climate of our State is admirably adapted.

Out of this extensive range of culture, it will doubtless be good policy for the individual farmer to select for his *leading* object, such form of husbandry as may

be best adapted, in his judgment, to the soil he has to deal with, and the position of his farm with respect to market—and to carry along such collateral objects of culture as may prevent the exhaustion of the soil, and fill up his time by furnishing business for every season of the year.

By this course of policy, the advantages of the division of labor may be secured to agriculture, precisely as far as it would be profitable to carry it; improvements would be more likely to be introduced; and greater skill and economy would accrue to the executive processes.

In new and sparsely settled sections of the country where land is abundant, and labor greatly in defect, there exists, from the nature of the case, a strong tendency to spread cultivation over a large surface, overtaxing the superficial powers of the soil, in order to give the greatest immediate effect to the limited amount of human agency.

Looking to immediate results, the settler, no doubt, accomplishes his purpose; but the habit of slovenly and unthrifty farming thus acquired, is apt to be persevered in, long after the necessity which seemed, at first, to justify it, has passed away. The soil, robbed of its apparent productive elements, refuses to yield its increase, and through the discouragement and impoverishment of the farmer, is condemned to years of sterility—when under a different treatment, it would have steadily improved in productive power, and have made a more and more grateful return for the good husbandry bestowed upon it.

The importance of acquiring a thorough knowledge of the THEORY, as well as practice of Agriculture, cannot, therefore, be urged too early or too forcibly on the farmers of Wisconsin. The education of the American farmer does not now terminate in a mere knowledge of the routine of sowing and cropping, and in a dutiful adherence to the practice of his father and his grandfather.

There is scarcely a branch of natural and physical science, which has not now, its known and acknowledged bearings on Agriculture.

The construction and the working of agricultural implements of every class, call into daily operation the principles of Mechanism. Hydrostatics and Hydraulics have their manifest uses, on, and about the farm. It were vain to assume that the practice of stock raising has nothing to ask from the truths of Animal Physiology. And as man and the entire animal kingdom, seek their sustenance, ultimately, from the herbage of the ground, vegetable physiology has still more important aid to render to every form of practical agriculture—determining the functions of the root, as imbibing the food of the plant, in watery solution; of the stem, with its organs of circulation; of the leaf, which retains and assimilates what is necessary to the structure of the whole and the character of the fruit, discharging into the atmosphere the superfluous matter in the shape of gases and vapor.

The philosophy of each of the imponderable agents, light, heat, electricity, and magnetism, has relations to vegetable life and health of an interesting and important character.

But of all the sciences, chemistry is the most fruitful in the aids it is destined to render to agriculture. By the analyses of the laboratory, we are put in possession of all the chemical elements of the vegetable kingdom, both those that are common to all plants, and those that distinguish one species from another. We are thus enabled to infer the composition of soil adapted to each plant; and by the analyses of a given soil, we ascertain the given elements in defect, which it is the office of good husbandry to supply.

This leads us to the doctrine of specific manures—the basis of extensive improvements made, and to be made, in practical agriculture.

Farmers have observed that some crops exhaust a given soil more rapidly than others. Chemistry detects the elements abstracted from the soil by the annual crop, and directs to the specific manures which will replace these elements, and keep the land in heart. Without the science, the land may be condemned to lie fallow, or to be recovered by the empirical and wasteful application of manures, in the grosser forms.

For example, tobacco, the vine, the pea, and clover, require lime in large quantities, and as the supply comes to the plant through the root, a succession of crops will soon exhaust the soil, unless that element be replaced by the hand of the farmer.

It cannot be doubted that every physical element found in the plant must have had its previous existence in the soil, or the atmosphere. "It is upon the clear understanding of this fact," as an English writer well remarks, "that the success-

ful business of the farmer depends. It is calculated to raise the operations of the agriculturist to a level with those of the manufacturer; and instead of committing the cultivation of the soil to accident, as if nothing were understood respecting it more than the mechanical preparation of it for the seed, it will serve to explain upon what causes growth and production, and consequently their opposites, abortion, and non-production, fundamentally depend, and of course, will enable him to provide against both." All this is well said, and presents the valuable thought very clearly to the apprehension of the farmer.

While on the subject of the specific food of plants, it falls in my way to say, that a large portion of the organic matter of the vegetable kingdom, exists in the atmosphere, in the gaseous form, and is largely soluble in water. It is the office of rain and snow to bring down these elements, and to saturate with them that portion of the soil that has been mellowed by the plough—and the deeper the ploughing, the larger is the fund of these elements, subject to the draft of the root during a period of drought.

I might go on to mention the agricultural bearings of physical Geography, of Geology and Minerology, the philosophy of subsoil ploughing, and other considerations connected with the character of natural soils, and their permanent improvement. But time fails.

I close this part of the subject by a single additional allusion to the successful efforts which modern science is making to grapple with the uncertainties of the weather—to subject the hitherto hopeless caprices of the elements to known laws; and if not to hand over to the farmer the winds and the storms, the cloud and the sunshine, sealed up in a bag, at least to forewarn him of their alternations, and to enable him, by a prudent forecast, to press them into his service, and, measurably, to control their results.

And now, gentlemen, in this hasty summing up of the sciences, comprising what is essential to the theory of agriculture, I would ask whether anything is included, which the farmer is not interested to know?—is anything included, which, if known by the farmers generally, would not contribute to elevate practical agriculture to an economical and social position eminently honorable and profitable to itself, and singularly auspicious of good to man?

I am uttering not the mere aspiration of hope, but the decision of sober judgment, when I say, that the day is not distant, when it shall be shame to the young farmer to commence the practice, without first having acquired the theory, of his profession.

I say of his *profession*, because, let it once be understood, that the industrial employments are to be approached through a course of scientific preparation, then the middle wall of partition between the liberal and the useful arts is broken down—let it be understood that Agriculture has its *theory* and its *philosophy*, then it rises at once to the dignity of a profession.

The sneer at the scientific farmer, which once disfigured the countenance of a self-satisfied "practical Agriculture," has already passed away, and given place to an expression of admiration at the taste, the economy, and the thrift of a better, because a *scientific* cultivation.

The sneer at the scientific farmer, if it ever meant anything, when done into plain English, could have meant nothing less, than that a certain amount of *ignorance* was necessary to qualify a man for a sound practical farmer—a sentiment which falls strangely on the ear of the agriculturist of the present day.

The eminent success of model and experimental farms, and the labors of the agricultural press, have brought the mind of the entire community to a just appreciation of the value of the sciences, in their practical applications to Agriculture and the Arts, and the importance of their universal dissemination.

The conviction is taking fast hold of the mind of Europe and of the older States of this Union, that for the thorough acquisition of this valuable agricultural knowledge, it will not do to depend on the ephemeral influences of popular lectures and addresses; nor yet on the mass of information placed before the farmer through the agency of the periodical press. Agricultural seminaries are beginning to be constituted, where the science may be acquired, and in connexion with model farms, its application may be made familiar to the professional pupil, in preparation for the successful and profitable discharge of the maturer duties of the practical farmer.

These views are rational and just. Agricultural science, like all other science, is to be acquired by study and research. The discipline and the instruc-

tions of the school, are essential to its seasonable and thorough acquisition. Without it, the farming processes fall to the low level of routine and drudgery. With it, Agriculture vindicates its undoubted claim to stand, not only in the first rank of the experimental arts, but to take its position, side by side, with the learned professions, in dignity and honor, as well as in profit.

Farmers of Wisconsin! If, throughout this argument, I have been so fortunate as to express your convictions, and if your judgment is with me on the topic of the scientific preparation of the young farmer for his great vocation, it is pertinent to enquire, in conclusion, whether it is not in your power, so to mould and to fashion the system of public instruction, as to embody and to realize the idea, so vitally important to the Agriculture of the State.

The educational organism for Wisconsin, as I understand it, comprises—1. The District School, carrying elementary instruction into every neighborhood in the State.—2. One Academic, or Union School for each township.—And 3. The University. The organic law of the University of Wisconsin, provides for the establishment of the several Departments—1. of "Science, Literature and Arts' —2. of "Medicine"—3. of "Law"—and 4. of the "Theory and Practice of Elementary Instruction,"

The Regents of the University propose to add a Department of the "Applications of Science to Agriculture and the Useful Arts;" to go into effect whenever the means shall be provided for the support of the Professor, the purchase of Apparatus, and the Ground necessary for a model farm.

Such a Department, suitably endowed by the State, would offer to the young men of Wisconsin, the future cultivators of the soil, without charge, a full course of instruction in the theory and practice of Agriculture; and the working of the model farm would defray, in part, the expenses of residence.

The pupils in this Department of the Philosophy of Agriculture and the Useful Arts, would have free access to the library of the University, to the collections of the various branches of Natural Science, and, in connexion with the regular classes, to the lecture rooms of the Professors of the other Departments, whether collegiate or professional.

From such conditions of culture the young farmer will go forth to his work, with juster views of the relations of the sciences to the arts, and of the arts to each other—he will find all remains of the middle wall between Agriculture and the Professions removed, his social position more fairly adjusted, his industrial agency more effective, better appreciated, and more amply rewarded.

But this is not all. The instructors of the Academic or Union Schools, should go from the University to their task, not only with the learning of the Normal Department, but well versed in the instructions of the Department of applied science.

Such an educational system is now offered to the farmers of Wisconsin.

Are you, then, prepared to endow in your University, for your own benefit, a Department of the "Applications of Science to Agriculture and the Useful Arts?" If so, your bounty will prove to be good seed, falling on good ground, springing up and bearing fruit, thirty, sixty, an hundred fold.

It is a fact of world wide celebrity, that Wisconsin presents to the settler the physical elements of prosperity, in rich profusion, and in beautiful combination.

With its soil and climate unsurpassed—with its capacity for rapid settlement and early maturity—with its continued alternations, in just proportion, of woodland and opening, of prairie, natural meadow, and lake—and with the command of both the Eastern and Southern markets, it needs but the means of professional culture, thus carried to the door of the farmer, through the system of Public Instruction, to finish what nature has so tastefully and so bounteously begun.

Bring, then, the educational agencies of the State into harmony with the great objects of your Association; follow up the auspicious beginnings of this day with ample provision for general professional culture, and you will leave an inheritance to your children, transcending all that you have felt or fancied of the destiny of Wisconsin.

Education, Gentlemen, is no mendicant. It begs nothing from your charity. Its proclamation to you is, "Give, and it shall be given to you again; good measure, pressed down, and shaken together, and running over, shall be returned into your bosom."

ARTICLE IV.

The Cities of Missouri.

By WM. GILPIN, Esq.

THE CITY OF INDEPENDENCE.—Next in rank to "Metropolitan St. Louis," and second in size, population and commercial repute, among all the flourishing young cities that dot our State, is beautiful *Independence*. Long ago, in 1824 and 1825, two counties sundered by the Missouri river, and flanked by the Western border line, sought at the same time their incorporation by the Legislature. On the North, the inhabitants, mostly emigrants from Kentucky, and advocating that gentleman's elevation to the presidency, called their county *Clay*, and its seat of Justice *Liberty*. On the South, as if in rivalry, emigrants from Virginia, Carolina and Tennessee, selected the name of *Jackson* for their county, and *Independence* for their city. As in the political contests of our country, so in progressive vigor of growth, Jackson and Independence, favored by a marvellous fertility of soil, robust industry and paramount strength of position, have grasped and kept the palm, advancing beyond all rivalry in population, production and wealth.

Jackson county, indeed, envelopes the outside of the great elbow of the Missouri river as it enters our State, and opens with uninterrupted ease upon the great prairie ocean that sweeps out South and West to the remote extremities of the continent. It is thus the avenue of mankind into those vast regions of superlative interest, as the flood of population disembarks from the river channel to flow into them. This county, like the five neighboring counties south of the great river, is a protrusion into our State of the gently rolling plain of the Kanzas basin, unparalleled in the world for the depth and fertility of its mulatto soil and of exquisite romantic beauty.

In the current course of human society round the world, geographical novelties flash up, and arrest the attention of mankind. Thus four hundred years ago America arose out of the ocean to the knowledge of wonder stricken Europe, never again to be lost. —Of a similar world-wide interest is the approaching construction of a "CONTINENTAL RAILROAD," from the Western terminus of Atlantic navigation, at Kanzas, in this county, straight out to the great ocean which washes Oriental Asia. Thus is reversed a standing inconvenience in the pathway of mankind: thus is knitted over a chasm in the universal comity of all the nations of all the continents; and thus *America*, heretofore the distracting barrier, comes to fill out and complete the circle in which three continents and a hundred nations bind the hemisphere of the North in one endless and graceful zodiac.

The area of the city of Independence is one thousand acres; its population *four* thousand, and the official assessment of property

two millions of dollars. Besides the public square, flanked on every side with substantial brick edifices, well graded and macadamized streets, relieved with the shade of the locust, an excellent taste is everywhere shown in the style and excellence of the shops and dwellings.

A commercial emporium upon our Western boundary, and our own bank South of the Missouri river, is a great want and desideratum to commerce. Such as Buffalo is to New York—Pittsburgh is to Pennsylvania. All the States have, for the convenience of commerce, created those commercial *portals*, where the central channels of business enter their territories. This city, the seat of Justice of Jackson county, and only nine miles from the frontier, has, up to this time, occupied this position, and seems to possess the commanding geographical locality to retain it.

Like all the county seats located in an early day, when the settling of the wild lands exclusively occupied the industry of the citizens, its site has heretofore been detached from the river, to enable it to approach the geographical centre of the county. The interval is *two miles*. A railroad has been constructed and finished to the river, to make the connection easy and rapid. This has not been sufficient to accommodate the increased business. Accordingly, streets have been opened and macadamized, grades over the river bluff have been constructed, so as to make the connection with the great steamboat traffic on the river front direct, unobstructed and abundant. It is also contemplated by the proprietors of the lands embraced in this interval, to offer for sale during the coming spring, in building form and lots, some six or seven hundred acres, through which these streets run.

Apart from other considerations, the geographical site of Independence, is singularly fine and attractive, having health, a high surface both level and well drained, and great beauty of position to recommend it. Besides the attention given to the Missouri river front, excellent roads have been opened and cleared to the frontier line, the streams bridged, in all directions, and good roads are everywhere under construction to give facility of access from the surrounding counties. The strongest wish also exists to attract to this commercial emporium, the trade of Clay, Clinton and Platte counties, across the river containing an aggregate of thirty thousand inhabitants.

The counties of Cass, Johnson, Vernon and Bates, contiguous on the South, contain eighteen thousand six hundred inhabitants. The county of Jackson has fourteen thousand inhabitants. The city of Independence is the geographical and commercial centre of these seven prosperous counties, containing fifty-thousand inhabitants.

But it is well here to insert the following exact statistical information, furnished by the Superintendent, De Bow, of the Na-

tional Census, and *officially* copied from the returns of the *seventh* Census, 1850.

Population of Eight Counties in Missouri—Free and Slave.

Counties.	Free.	Slave.	Aggregate.
Bates	3,528	141	3,669
Caldwell	2,180	136	2,316
Cass	5,612	478	6,090
Clay	7,590	2,742	10,332
Clinton	3,347	439	3,786
Jackson	11,031	2,969	14,000
Johnson	6,585	879	7,464
Platte	14,047	2,798	16,845
Total	53,920	10,582	64,502

Productions of Agriculture in Eight Counties of Missouri.

Counties.	Acres of Land in Farms.		Cash value of Farms.	Value of Farming Implements & Machinery.
	Improved.	Unimproved.		
Bates	20,828	27,660	174,371	28,253
Caldwell	14,707	36,837	233,491	19,585
Cass	34,800	85,898	518,741	39,063
Clay	71,905	142,661	1,927,268	106,991
Clinton	26,244	85,217	800,204	34,604
Jackson	49,619	129,688	1,723,995	84,985
Johnson	41,000	105,915	752,935	53,060
Platte	94,446	124,752	3,738,215	189,292

Productions of Agriculture in Eight Counties

Counties.	*Live Stock.*						
	Horses.	Asses and Mules.	Milch Cows.	Working Oxen.	Other Cattle.	Sheep.	Swine.
Bates.....	1,776	214	2,917	1,396	6,782	4,135	16,500
Caldwell.....	909	281	964	518	2,424	4,931	8,149
Cass.....	2,623	611	2,473	2,477	4,945	7,964	14,006
Clay.....	4,481	1,167	4,113	2,052	8,536	17,688	25,532
Clinton.....	1,625	441	1,676	1,062	4,743	6,424	13,419
Jackson.....	4,517	1,396	3,905	2,840	7,925	14,784	28,312
Johnson.....	3,221	1,111	2,988	1,837	6,824	13,281	19,806
Platte.....	6,288	960	5,505	3,647	11,256	20,234	45,133

Productions of Agriculture in Eight Counties

Counties.	*Produce during the year*							
	Peas and Beans, bushels of.	Irish Potatoes, bushels of.	Sweet Potatoes, bushels of.	Barley, bushels of.	Buckwheat, bushels of.	Value of Orchard Products in dollars.	Wine, gallons of.	Value of Produce of Market Gardens.
Bates.....	346	6,738	1,481	17	69	1,184	10	282
Caldwell.....	16	3,043	526		155			
Cass.....	318	7,482	1,968			1,962		603
Clay.....	2,714	18,338	8,536	10	49	19,355		50
Clinton.....	43	5,591	1,683		52	2,333		
Jackson.....	323	18,041	6,534	85	90	2,575	83	
Johnson.....	29	8,442	2,950		200	936	8	25
Platte.....	200	43,630	9,176	135	419	6,358		221

of Missouri.—Seventh Census.

Value of Live Stock.	*Produce during the year ending June 1st, 1850.* Wheat, bushels of.	Rye, bushels of.	Indian Corn, bushels of.	Oats, bushels of.	Tobacco, lbs. of.	Wool, lbs. of.
185,168	8,614	16	120,340	49,035	4,590	12,836
114,512	12,734		16,135	45,740	760	13,691
246,923	13,524	29	300,976	65,113	5,353	18,475
420,615	50,890	2,018	834,830	112,027	20,050	41,461
178,444	22,363	234	299,070	48,469	6,850	14,672
450,364	55,856	15	938,309	124,363	38,920	30,027
314,697	22,930	535	445,895	89,245	900	31,539
687,480	129,067	2,455	1,844,287	127,392	66,000	59,786

in Missouri.—Seventh Census.

ending June 1st, 1850.

Butter, lbs of.	Cheese, lbs. of.	Hay, tons of.	Clover Seed, bushels of.	Other Grass Seeds, bushels of.	Hemp. Dew Rotted, tons of.	Hemp. Water Rotted, tons of.	Flax, lbs. of.	Flaxseed, bushels of	Silk Cocoons, lbs. of.
47,962	2,295	859	3				2,800	72	
9,965	7,400	1,015			20		2,000	110	2
59,090	3,555	1,610		53	1		2,048	59	
118,230	3,942	2,959	34	14	1,274	14	8,497	381	4
52,596	2,090	1,585		31	193		6,276	50	5
139,622	1,885	798		80	361		1,443	276	
102,155	1,625	1,247		62	65		7,670	27	
959,811	1,027	3,551		51	4,345	10	420		

Productions of Agriculture in Eight Counties of Missouri.

Counties.	Maple Sugar, lbs. of.	Molasses, gallons of	Beeswax and Honey lbs. of.	Value of Home-made Manufactures.	Value of animals slaughterd.
Bates	100		16,863	$14,080	$20,937
Caldwell			9,886	6,890	17,307
Cass.			22,024	19,450	34,249
Clay	3,900	119	11,891	31,947	94,580
Clinton	930	40	9,303	19,366	25,985
Jackson			4,253	21,869	84,456
Johnson			30,765	21,369	45,535
Platte	250		136,213	54,179	150,979

Products of Industry in Eight Counties of Missouri, during the year ending June 1st, 1850.

Counties.	No. of Manufacturing establishments.	Capital invested in Real & Personal Estate in the business.	Raw material used, including Fuel. Values.	Average number of hands employ'd. Male.	Female.	Wages. Average monthly cost of male labor	Average monthly cost of fem. labor	Annual Product. Values.
Cass	19	$22825	$29527	51		$903		$51124
Caldwell	7	6600	12080	16		228		20850
Clinton	17	15030	41800	32		631		27900
Clay	42	63845	63330	138		862		126125
Jackson	78	107903	135152	279		6555		270553
Johnson	28	20050	35536	57		786		57968
Platte	64	207215	398047	246		3,6926	35	789484

Bates has no Estimates returned.

An hourly advancing and expanding growth enhances the value of a prosperity that thus shows so fair in the official tables made more than two years since.

But it is also much more and beyond this wonderfully happy and geographical position and the commercial centre of a growing *external* commerce, permanent in character, and compelled to have a rapid expansion for all future time.

At the mouth of the Kansas river, eight miles west of Independence, the great Missouri coming from the north, bends to the

east, and enters the State at a right angle. At the point of this right angle or elbow, it receives the Kansas river, a large stream which rises at the foot of the Rocky Mountains, and runs due east across the Plains, being about seven hundred and fifty miles from its source to its mouth. But all along the southern rim of the Kansas basin runs a prairie crest, level and smooth, forming the *divide* of waters between it and the Arkansas river. This *divide*, throwing off a finger between the two little streams called the Blues, traverses Jackson county, and reaching the south bank of the Missouri, flattening out, becomes spacious and level, and at its contact with the river forms the site of Independence.

This then explains the permanent excellence of geographical position. Upon this *divide* is located, and will forever remain, the great natural road of communication, both of travel and commerce, with the immense countries upon the waters of the Arkansas and the Kansas too—with Texas, with new and old Mexico, with California and Oregon; add also, the western portions of the States of Missouri, Arkansas and Louisiana, everywhere of easy access on the prairie front. The cities higher up the river, as Weston and St. Joseph, are out of the central direction of *Western* travel, upon the east bank of the Missouri, which has to be crossed and the high bluffs and broken region extending into the interior from its western bank, to be overcome in an uninhabited, Indian country; whereas none of these serious disadvantages exist at Independence, owing to its admirable locality on the south bank and upon the point of a *divide*. This *divide* is also the most westwardly in the State, and the last one below the Kansas, leading out into the Great Plains.

The *St. Louis and Pacific Railroad* touches the river at Indepence, which is the *tap* point to receive the produce of the whole immense country of the Missouri river above its *elbow*, and forward it to Eastern and Southern countries. This grand and glorious *Continental railroad*, when it shall come from the tide ports of the Pacific ocean, to pour plenty over *interior* America, will here first strike the great navigable artery of the continent and let out its groceries and salt and abundant comforts upon the great river system of transportation! Thus is Independence city, the first great eastern terminus of the Pacific railroad, as it comes from that ocean to reach the navigation of the Atlantic waters!

But the Territory of Nebraska about to be organized, the commanding portion of which will be the basin of the Kansas and the river country of the Missouri shore up to the mouth of the great Platte. Of this whole scope of wonderfully fertile country, Independence will become the commercial emporium, as St. Louis has similarly been for the countries west of it for the past twenty years. In four years there will be created out of a part of Nebraska, the great central *State of Washington*. This State will have the following boundaries: leaving Missouri at Fort Scott, and

running due West four hundred miles; thence due North to the great Platte; thence down the Platte to the Missouri river, thence by the channel of the Missouri river and the Western boundary of Missouri to the beginning. Of this young State, Independence will be the business portal to the Eastern world.

The city of Independence has a singular identity with the Gulf of Mexico and Texas, whence comes the essential and immense grocery trade. The *meridian* of Independence also passes through Galveston in Texas. The distance is just seven hundred miles; whereas, by the river, the Mexican Gulf is sixteen hundred miles distant. The capability of constructing a railroad from Independence to Galveston is wonderful. It is a smooth prairie expanse to the Trinity river, which descends across Texas to Galveston Bay. Such a road will traverse the most delicious of all countries, which skirts the line North and South down the continent, where the timber half and the prairie half of interior America merge into one another.

True, it is, that this strip of country, so fertile in soil, gentle in climate, and so adorned by Nature to woo into it the population of the old sterile *Thirteen* States, is at present *tabooed* by their jealousy. Federal power, made the meretricious engine of *maritime* monopoly and spleen, declares it an Indian waste, and interdicts it to the white millions.

But the healthy love of truth and human right will some day rekindle in the hearts of the agricultural citizens of the Central States. Then these lands will be rapidly occupied by the people, and their proceeds at a just and moderate price, link together these isolated States and cities with beneficent and harmonizing railroads.

This accomplished, (and it will come soon) the great Gulf trade will ascend to Independence, and thence distribute itself to the North by the Missouri river and by other railroads penetrating Iowa and new States to the West of it. Vice versa will flow out the reflex trade in the productions of these countries. Thus will be blended on the west in the natural social ties, suggested by their geographical proximity and regular order of climate and productions, the great fraternal States of Texas, Arkansas, Missouri and Iowa.

Again, there is in the geographical locality of Independence an interesting fact which seems to show the eminent favoritism of supreme *Nature* herself. At the junction of the Smoky Hill and Republican Forks, which unite to form the Kansas river, in the bosom of the immense fertile prairies, and in an undulating country of the most fascinating picturesque beauty, is the most extraordinary focal centre of the American continent. Its latitude is 39 degrees, its longitude 96 deg. 24 min. west of Greenwich. This point is 121 miles west of Independence.

If from this centre a circle be described so as to touch the northern boundary parallel of 49 deg. as a tangent, the opposite side of this circle will sweep through Mobile, through New Orleans, and grazing the intermediate Gulf coast, pass through Matagorda harbor in Texas. This point at the forks of the Kansas is then the centre of our National Territory, north and south. If also another concentric circle be described through San Francisco, it will sweep along the Pacific coast, within a few miles of the beach, cutting the seaports of Portland and Vancouver on the Columbia river. Its opposite side will sweep through Quebec and Boston, through Havana in Cuba, and through Vera Cruz and the city of Mexico. This same point is then also the centre of our territory between the oceans, east and west. It is equally the centre, geographically, of the Valley of the Mississippi.

Besides being thus in a three-fold degree the geographical centre of the Union, both as it now is and will be hereafter enlarged by more States, there is here an equally characteristic demarcation in Agriculture. The half extending to the Atlantic has timber, is all adapted to the plough and grain being prominently marked for arable agriculture. But the half extending to the Pacific is without timber, mountainous, dry, and clothed with perennial grasses, being adapted to cattle, horses and sheep, but repelling the plough. This half is therefore prominently marked for pastoral agriculture. Again, its latitude is that which marks the joining line of different agricultural systems. On the north, the greatest energy is devoted to the production of food, as grain, hay, swine, roots and orchard fruits. On the south to hemp, tobacco, wool, the grape, fruits, and cotton, employ the chief agricultural energy. Now all the elements which go to group together society in its densest and most adhesive form, here approach one another, come into contact and are blended.

The climate is of that exact medium which the white races in all ages and countries have found most congenial, and is central to the belt of the temperate zones. From *Independence*, the nearest point of navigation on the great natural artery of commerce, the channel of Missouri, goes to St. Louis, where the rivers open like the fingers of a fan towards the East; the Upper Missouri penetrates the North by 2000 miles of navigation—towards the West and South there is no navigation, but the smooth character of the continent in these directions everywhere invites railroads.

In the above narration of facts, the design is to be faithful in delineating nature, and to throw prominently out what appears to be paramount advantages possessed by this *City of Independence*, beginning now in the ripeness of time to excite interest beyond its own immediate vicinity.

In truth, society has followed a very uniform law for several thousand years, as its progressive wave has rolled slowly through the three northern continents, Asia, Europe and America. On

the great navigable rivers which present broad, fertile basins having navigable *throughs*, society has always congregated more densely than elsewhere, and has erected large commercial cities or emporiums at easy intervals upon their banks. Such have been the Ganges, the Nile and the Danube in the old world. The same law is demonstrated still more clearly on the North American rivers, thus upon the entrance to the river St. Lawrence are Quebec, Montreal, Toronto, Buffalo, Cleveland, Detroit, Chicago. On the entrance by the Ohio are Philadelphia and Baltimore, Pittsburgh, Wheeling, Portsmouth, Cincinnati, Louisville, Evansville. On the Mississippi are New Orleans, Natchez, Vicksburg, Memphis, Cairo, St. Louis. These cities of first importance are usually one hundred leagues apart. The superior fertility of America will require them to be more numerous and larger than in the old world. A slight inspection of a map of the river system of the world, such as Humboldt has made for us, will draw the eye at once to that portion of the Missouri river running west and east from the mouth of the Kansas to St. Louis, and in length about four hundred miles.

The wonderful centrality of this water channel has been described above, and around it is an undulating calcareous plain of one thousand miles radius, unparalleled elsewhere in fertility, into which the human race will continue to accumulate until they reach many hundred millions in number. These two cities at the extremes of this water channel, St. Louis and Independence, stand out upon the face of the continent like eyes in the human head. The peculiar configuration of the continent, and of its rivers and plains, make these *two* natural *focal* points. This will not be interfered with by any railroads or other public works which may be constructed by arts, as these latter are successful and permanent *only* when they conform with the water grades of nature and the natural laws which condense society.

These memoranda are thrown out for the information of fair and candid judgments. Such is the rapidity with which these localities for great cities are sought out and the cities founded and built, and so absolute is the necessity for them as Territories and States rise in the wilderness under the agricultural energy of the rural population, that correct geographical data for their selection is immensely important in the general economy. They have a bearing and interest upon States and the whole people of the States and of the continent. The object is to attract the attention of energetic citizens on the move; to cite them to what is detailed above; to harmonize and identify distant cities, whose interests and prosperity are mutual, and to throw out in relief a young and prominent candidate for the general favor—and to be such a favorite with the whole American people, the young *city of Independence* proposes herself.

ARTICLE V.

Mississippi Valley Exhibition at St .Louis.

The spirit recently manifested throughout the Western States in getting up County and State Fairs, very naturally suggests the idea of an exhibition of the industry and natural wealth of the Valley of the Mississippi upon a more extended scale. Not a "World's Fair:"—we are too remote from the great highway of nations to expect contributions from foreign countries;—but a fair for the exhibition of the products of our own great region. A fair to be held at a central point accessable to the inhabitants of the entire valley west of the Alleghanies.

The arts are ambulatory. Natural wealth is stationary in its nature; and the question in political economy which most interests the civilized world, at the present time, is, where can the greatest amount of natural wealth be found in a climate congenial to industrial pursuits? Much has been said and written touching the mines, soil and climate of the Mississippi Valley; let us make a complete collection of our mineral and agricultural products, and we shall convince all who may visit the exhibition that the one half of our wealth has not been told to them. We can imagine no measure better calculated to attract the miner, manufacturer and artizan than such an exhibition, provided it be undertaken in the proper spirit, and conducted by individuals who can inspire the people of other countries with confidence in the enterprise.

An exhibition of the objects here suggested, would be of more benefit to the Western States, and even to the whole Union, than a dozen such fairs as that now being held at New York.

We are not to be understood as underrating the effects of the New York exhibition; for notwithstanding the little time allowed for preparation, we are persuaded that Missouri will be greatly benefitted by it. The favorable notice taken of our manufactures and works of art, will lead western people to look to St. Louis for many commodities which it has been supposed could be obtained only in the eastern cities.

But it is from the exhibition of our minerals that the most important benefits are to be expected, and already through its agency, at least in a good degree, the mineral wealth of Missouri

is attracting far more attention than at any previous period. Specimens consisting of iron, lead, copper, coal, cobalt, nickel, marble, &c., from about fifty localities in Missouri, have found a place in the Crystal Palace, at New York; but owing to the little time allowed for making the collection, the mines or veins from which they were taken, have not been properly represented. Had the agent for Missouri known at the date of his appointment that the time for admitting mineral specimens would be extended, as it finally was at his request, complete series of specimens from the principal localities could have been collected and arranged, and the number of localities represented would, in all probability, have exceeded one hundred.

It is the duty of our citizens to make the resources of the State known to the world; and the only sure way to effect this object is to take the management of the matter into their own hands. Let them resolve to hold a fair at St. Louis, at some time during the year 1855, and commence preparing for it at an early day. By the summer of that year we may expect the railroads east of the Mississippi, terminating at this place, to be in operation affording easy access to St. Louis from the States east of the river. By that time too the mines of Missouri and Illinois will have been sufficiently explored by scientific geologists to enable us to make a fair exhibition in the mineral department.

We throw out these suggestions for the consideration of our citizens, and leave it with them to judge whether the object proposed will compensate for the labor and expense incident to its attainment.

BRIDGE OVER THE MISSISSIPPI AT ROCK ISLAND.

At the last session of the Illinois Legislature, a charter was obtained by parties interested in the Rock Island Railroad for the construction of a bridge across the Mississippi river at that point. We learn from the Chicago papers that the contract for building the bridge has just been let. It is to be completed by the first of December, 1854. Messrs. John Warner & Co., have the contract for the stone work; and Messrs. Stone & Boomer, of Chicago, build the superstructure. The slough on the east side of the Island is to be crossed by three spans of 150 feet each; and the main channel of the river by five spans of 250 feet each, and a draw for the passage of vessels. The total length of the main bridge will be 1,580 feet. The bridge will be a beautiful and most substantial structure.—*Alton Telegraph.*

JOURNAL OF INTERNAL IMPROVEMENTS.

(From the American Railroad Journal.)

Cost of Transportation on Railroads.

The question of cost of transportation by railroad has been thoroughly considered in Massachusetts, particularly in the case of the Western railroad. The stockholders of that company being desirous of ascertaining the cost of moving persons and property on *their* road, and also the cost compared with other roads, appointed a committee to investigate this subject. At the request of this committee, Mr. Swift, the president of the road, went into an elaborate examination of the matter, and found from the experience of five years operation of eight of the leading, most profitable, and best managed Massachusetts roads, that the actual cost of moving a passenger or a ton of freight was equal to 1.445 cents per mile. The following table, prepared from official sources will show the result arrived at.

Statement showing the number of passengers and tons of freight carried one mile; the total expenses and cost per passenger, or per ton of freight, on the following roads for a period of 5 years, ending Jan. 1, 1853:

	No. of passeng. and no. of tons carried 1 mile, average.	Gross expenses.	Cost per passenger, or per ton p. mile carried.
Western	213,925,952	2,937,593	1.373 cents.
Boston and Worcester	126,499,456	1,899,845	1.502 "
Boston and Maine	92,997,700	1,237,515	1.330 "
Fitchburg	82,702,400	1,077,169	1.302 "
Boston and Lowell	82,227,452	1,258,519	1.535 "
Eastern	74,720,643	985,066	1.318 "
Boston and Providence	50,118,288	860,220	1.716 "
Old Colony	36,198,135	721,912	1.994 "
	759,390,026	10,977,839	1.445 cents.

The gross receipts upon the above roads for the same period, were $21,744,518; or 2.860 c. per ton or per passenger carried one mile.

The operations of the *Erie* road for the past year were as follows: (See McAlpine's report for 1852, page 71.)

No. of passengers and tons of freight carried 1 mile	177,877,249
Gross earnings for do	3,265,845
Total miles run	2,389,271
Received per passenger or per ton of freight carried one mile	1.840 cents.

Estimating the expenses of the Erie road to equal those on the Massachusetts roads, which have been long in operation, and thoroughly built equipped, and under a system of discipline the result

of years of training, and we have .395 cents per passenger, or person carried one mile as the net income on the *Erie* road; and by multiplying this sum by 177,877,249, and we have an aggregate net income of $702,615 for the past year, instead of $1,878,192, as claimed by the company, or a trifle over ⅜ the amount claimed, and a sum $557,385, less than what was paid for interest alone.

TABLE showing the cost, Gross and Net Earnings and Dividends of several Massachusetts roads for 11 years, ending January 1, 1853.

Boston and Worcester Railroad.

	Value.	Cost.	Gross earnings.	Expenses.	Net income.	Div. p. ct.
1842...	$109	$2,374,500	$349,207	$168,510	$180,697	7
1843...	107	2,764,400	333,367	206,641	176,726	6
1844...	114	2,836,200	426,403	233,264	193,139	7½
1845...	120	2,914,100	487,455	249,729	237,726	8
1846...	116	.....	554,712	283,876	270,836	8
1847...	112	3,485,200	722,170	381,986	340,184	10
1848...	115	4,113,600	716,284	381,917	334,367	8½
1849...	106	4,650,400	703,361	405,551	297,810	6
1850...	93	4,908,300	757,947	377,041	380,906	6½
1851...	102	4,882,600	743,923	392,687	390,000	7
1852...	101	4,845,966	758,819	427,522	331,397	7
			6,603,648	3,512,734	3,633,924	7½

Boston and Providence Railroad.

	Value.	Cost.	Gross earnings.	Expenses.	Net income.	Div. p. ct.
1842...	$91	$1,872,500	$236,468	$112,824	$123,644	6
1843...	88	1,892,800	233,388	125,374	108,014	6
1844...	107	1,914,500	283,701	113,835	169,866	6
1845...	108	1,926,100	350,629	152,802	197,827	7
1846...	111	2,000,700	351,227	169,679	181,548	8
1847...	103	2,109,400	361,779	167,900	193,879	7⅜
1848...	99	2,544,700	354,375	182,287	172,088	6½
1849...	91	3,031,100	354,332	163,682	190,650	6
1850...	88	3,370,300	370,727	159,279	211,448	5½
1851...	85	3,416,200	377,397	177,715	199,682	6
1852...	86	3,546,203	429,484	216,857	212,626	5½
			3,703,507	1,742,235	1,961,272	6.36

Boston and Maine Railroad.

	Value.	Cost.	Gross earnings.	Expenses.	Net Income.	Div. p. ct.
1842...	$79	.....	$155,880	$79,279	$76,601	6
1843...	83	1,260,300	178,745	99,755	86,990	6
1844...	103	1,384,000	233,101	127,621	105,480	6½
1845...	109	1,485,500	287,063	139,335	147,728	7
1846...	111	1,935,100	349,137	165,520	183,617	7
1837...	112	2,626,700	511,505	205,026	306,479	9
1848...	112	3,021,200	511,628	256,534	255,094	8½
1849...	109	3,571,800	522,335	258,495	263,810	5½
1850...	103	3,930,000	594,963	289,478	305,485	5
1851...	106	4,021,600	633,095	305,068	328,027	7
1852...	105	4,092,926	661,521	328,306	338,215	7
			4,638,973	2,241,417	2,497,556	6.77

Boston and Lowell Railroad.

	Value.	Cost.	Gross earnings.	Expenses.	Net Income.	Div. p. ct.
1842..*	$595	$1,834,900	$278,310	$131,013	$147,297	8
1843...	595	1,978,300	277,315	109,367	167,948	8
1844...	640	1,863,700	316,999	165,257	151,652	8
1845...	580	1,902,500	356,067	175,042	181,025	8
1846...	575	1,932,600	384,102	207,987	176,115	8
1847...	572	1,940,400	448,555	249,225	199,330	8
1848...	550	1,956,700	461,339	266,516	191,823	8
1849...	550	2,013,710	416,488	260,904	155,584	8
1850...	556	1,945,600	406,471	256,508	149,913	8
1851...	570	1,945,600	409,153	267,035	142,118	8
1852...	480	1,995,249	383,108	257,227	125,881	7½
			3,437,767	2,346,081	1,791,687	7.95

* Par value $500.

Eastern.

	Value.	Cost.	Gross earnings.	Expenses.	Net Income.	Div. p. ct.
1842...	$100	.....	$69,169	$119,040	$150,129	6
1843...	89	.....	279,562	104,641	174,921	6
1844...	104½	2,388,600	337,238	109,319	227,919	7½
1845...	112	2,406,400	350,150	116,840	233,310	8
1846...	104	2,471,600	371,339	132,556	238,783	8
1847...	108	2,815,100	424,841	135,083	289,758	8
1848...	104	2,937,200	479,158	182,216	296,942	8
1849...	104	3,095,400	517,929	183,980	333,940	8
1850...	101	3,119,300	539,076	185,118	353.858	8
1851...	104½	3,120,400	502,054	195,399	306,655	8
1852...	98	3,120,391	488,973	247,955	241,018	8
			4,559,489	4,712,247	2,847,222	7.59

Western.

	Value.	Cost.	Gross earnings.	Expenses.	Net Income.	Div. p. ct.
1842...	$80	.....	$512,689	$266,619	$246,070	0
1843...	45	7,087,200	573,882	303,973	269,909	0
1844...	53	7,501,200	753,753	314,074	439,679	3
1845...	91	7,686,200	813,489	370,621	442,859	5
1846...	96	7,741,700	*878,418	*412,679	465,739	6
1847...	99	8,185,800	1,325,327	676,689	648,647	8
1848...	105	8,769,500	1,332,068	652,357	679,711	8
1849...	102	9,900,100	1,343,810	588,322	755,488	8
1850...	101	9,926,900	1,369,514	607,549	761,965	8
1851...	104	9,963,700	1,353,895	597,756	757,139	8
1852...	98½	9,963,700	1,339,873	656,678	683,194	8
			11,596,728	5,447,417	6,149,400	5.54

* 11 months.

It will be seen that the profits of the above roads reached their highest point in 1847. The dividends paid that year averaged 8 4-10 per cent., against 7 1-6 per cent. for the past year, or a falling off of 1¼ per cent., or 12½ per cent. of net earnings. In the same time the average price of their shares has fallen from 109 to 96½.

Charleston, Mo., Railroad Meeting.

On the 9th of June, 1853, a Railroad Meeting of the citizens of Mississippi County was held at Charleston, Mo.; Judge NOAH HANDY, Chairman, and JOHN C. THOMAS, Secretary; at which Geo. Whitcomb, Hon. Harrison Hough, Judge H. W. Molder, Dr. H. M. Ward, Alfred M. Bedford, Felix Badger, and John Bird were appointed a Committee to inquire into the probable cost of making a railroad across the swamp country, upon the Cairo and Fulton route, and to report on the 6th of September, 1853.

At the adjourned meeting in September, GEO. WHITCOMB, Chairman of the Committee, made a report of minute, interesting and valuable items. The statistics and additional information about the Swamp District are particularly important. We, therefore, herewith present all that portion of the report embraced in the call of the resolution.

The Committee, to whom was referred the probable cost of the Missouri portion of the Cairo and Fulton Road, report

That they have prepared their estimates from such data as were within their reach, and they believe nearer the truth, than can well be made in a hill country, without accurate topographical surveys, the route upon which their investigations were required was the Cairo and Fulton Road, but as the main object was to ascertain the probable expense of making a Railroad through what is called the Swamp country, the estimates may be used upon the routes to connect the Mobile Road from Columbus, or the Nashville road from Hickman, with the Iron Mountain Road.

The distances are obtained from Government surveys, and are "air lines," the route of the Cairo and Fulton Road, adopted for our estimates, begins at Ohio City, opposite Cairo, and running southwesterly upon the ridge between the two cypresses, past Badger's mills, to the mounds in Sec. 5, T. 26, R. 17, thence west on the line between Sections 5 and 8, through Charleston to Sec. 12, T. 26, R. 11, in Stoddard county, being across the swamp on the route to Bloomfield and the Chalk Bluffs, and somewhere near the proper place to branch off with the Iron Mountain Road, should it be located in the valley of Castor river. From Ohio City to the edge of Matthew's Prairie is 12 miles. We have estimated cutting the timber and clearing the track at $200 per mile—cutting the timber 100 feet and clearing the track 30 feet wide. From observations taken by Doct. A. E. Mardick we have averaged the embankment at 4½ feet, which will give 12 inches upon the high grounds; in this section will be required some four or five open ways or culverts to pass off the head waters that might accumulate. Of course we make no calculations for river overflow, taking it for granted that the county will make a levee out of the swamp land donation, to protect the country from inundation, the means being fully ample to do it.

From the edge of the Prairie to the northcut cypress, 8 miles, is prairie country and very level. We have averaged the embankment at 12 inches, and estimated the cost by the prices paid for throwing up common road through the same country.

The northcut cypress, 2 miles, is heavy timbered. We have put the cutting and clearing at $500 per mile and the embankment at two feet. We think our estimate on this section large—as the present road across the same place is raised 12 inches, and cross-laid with timber, making the corduroy railroad, so common in the west, cost less than $300 per mile exclusive of bridges, and we see no reason why it is not sufficiently elevated for railroad purposes. This section is already protected from overflow by the levee from Commerce to Price's Landing. Two small bridges will be required to pass off the headwaters.

The Sandy Woods, 3 miles, is similar to the prairie, except

there is some small timber and low places called glades. We have averaged the embankment at 18 inches.

The marsh, called lake St. John on the maps, 1 mile, will require an embankment of 4½ feet and a small bridge or culvert for head waters.

Big Prairie, 3 miles, will be similar to Matthew's Prairie.

The route across the swamp, 9 miles, we have terminated at Sec. 12, T. 26, R. 11, believing that would bring us to high land. Not having examined this section personally, we have relied upon data furnished us by A. M. Bedford, Esq., the timber being most of the way heavy, we have put the clearing at $500 per mile. The embankment through the worst part, called "Nigger Wool," will require to be 9 feet—the residue we have averaged at 4½ feet, though we think three feet will be found sufficient. There will be three streams to cross: Castor, Little River, and the Running Slough.

Our estimates for cutting timber and clearing track have been based upon work done upon the State road from Charleston to Ohio City, but we have doubled the prices then paid—the grading through the prairie we have estimated from similar work upon county roads. Our calculations for embankment has been for 15 feet wide at the top, and increasing 3 feet in width for every perpendicular foot down. We have estimated the price at 10 cents per cubic yard, which, as the ground is loose and sandy, with no rocks, and can be scraped upon each side with teams, we believe to be a high price—at any rate it is as much as was paid by the swamp commissioners for leveeing, after deducting the expense of cutting timber, and it is notorious that they were profitable jobs to the contractors, and certainly it is a much better price than 17 to 25 cents is for similar work in a clayey or rocky soil. We have put the work through the northcut cypress at 15 cents, on account of its being through cypress timber a part of the way. As to bridges we have no data, except bridges on common roads, as they must necessarily be built of timber, and all the items of cost furnished us from other roads have been for bridges either partially or wholly built of stone. In every case the timber will be in the immediate vicinity of the bridge to be built. The road will pass near to and through three cypresses in the 38 miles. In the first one, 7 miles from Ohio City, Felix Badger, Esq., has two steam saw mills now employed in cutting ties for the Mississippi and Ohio Road, and until lately for the Pacific Road. He will furnish ties 7 inches square for 25 cents each upon the road. They cost the Pacific Road 45 cents delivered at St. Louis, and we suppose at least 50 cents when upon the road, making a saving upon our road of nearly one-half in the expense of ties, and the same in all other uses of timber, the road passing through the finest cypress, walnut, locust and oak timber in the world. Should our estimates of clearing and grading be thought low, we are authorized to say that re-

sponsible men will take the work through our county at the estimates, and be glad of the chance. We have made no calculation for overflow in the big swamp, believing that the land donated by Congress, reaching from the city of Cape Girardeau to the mouth of the St. Francis, will be sufficiently valuable to cause it to be securely levied.

Our estimate in tabular form is as follows:

ESTIMATES.

Section 1.—From Ohio City to Matthews' Prairie (middle of Sec. 4) 12 miles:		
Clearing track, $200 per mile	$2,400	
Embankment, 4½ ft. at, 10c. per yard	22,800	
Extra for culverts	1,000	$26,200
Section 2.—Edge of prairie to Northcut Cypress, 8 miles:		
Clearing track	200	
Embankment, 12 inches	2,400	
Culverts	200	2,800
Section 3.—Northcut Cypress, 2 miles:		
Cutting timber, &c	1,000	
Embankment, 2 feet, at 15 cents per yard	2,300	
Bridges $500 each	1,000	4,300
Section 4.—Sandy Woods, 3 miles:		
Clearing track	300	
Embankment, 18 inches, at 10 cents	1,200	
Culverts	1,000	2,500
Section 5.—Lake St. John (a marsh), 1 mile:		
Clearing	100	
Embankment, 4½ feet	1,900	
Culverts	500	2,500
Section 6.—Big Prairie, 3 miles:		
Clearing track	100	
Embankment, 12 inches	900	1,000
Twenty-nine miles		$39,300
Section 7.—Big Swamp, 9 miles:		
Clearing, $500 per mile	4,500	
Embankment, Nigger Wool and other low places, 3 miles, 9 feet	45,100	
Residue, 6 miles, 4½ feet	11,400	
Bridge on Little River, 250 feet long	2,000	
Bridge on Castor River, 200 feet long	2,000	
Bridge on Running Slough, 160 feet long	1,000	
Culverts in Nigger Wool, &c	1,000	67,000
		$106,300

AVERAGE FOR ROAD BED.

Ohio City to Swamp, 29 miles	$1,400	per mile.
Across Swamp, 9 miles	7,450	"
Whole line, 38 miles	2,800	"

SUPERSTRUCTURE PER MILE.

Estimate of Pacific R. R. rail, 65 lbs. per yard, with 1-17th added for turnouts	$7,400	"
Estimate of H. Cobb, Esq., made last January for Iron Mountain road with same rail, with necessary sidlings and switches	7,500	"
Estimate of Warsaw and Rockford Railroad, furnished by P. E. Bland, Esq., of St. Louis, with best rail, &c.	9,632	"
As the difference is mostly in the price of iron, and as we get our ties and other timber cheaper, we estimate at	9,000	"
Average cost of road to swamp, when finished	10,400	"
" " across swamp	16,450	"
" " whole road	11,800	"
Total cost, 38 miles	448,400	"

We have calculated the distances of some of the principal points, so that others could make their own estimates, should they choose to do so.

From Charleston to Ohio City	13	miles.
" " " Columbus	17½	"
" " " ferry below Mills Point	25	"
" " " Dr. Ward's landing above Mills Pt.	21¼	"
" " " Bloomfield	33½	"
" " " Sec. 12, T. 26, R. 11	26	"
From Sec. 12, T. 26, R. 11, to Chalk Bluffs	33¾	"
" " " " Iron Mountain	62½	"

These distances are air lines.

We would here remark, by way of explanation, that the estimate of Mr. Cobb, above alluded to, was founded on the report of Mr. Barney.

Gen. Gibbs, of Tennessee, addressed the Meeting on the subject of Railroads.

On motion of the Rev. T. B. Fuqua, the report of the Committee was unanimously adopted.

Resolved, That we are in favor of carrying out the plan proposed by Congress for the Cairo and Fulton road, and also the extension of the Iron Mountain road to the river, and we pledge this county to assist in their completion by every means in its power.

Resolved, That we fully believe that the road bed through this county and Scott, can be made for less money than the estimate

of the Committee, though we approve their course, of erring, if at all, upon the safe side.

Resolved, That George Whitcomb, A. M. Bedford, John C. Thomas and Judge Noah Handy be appointed a Committee of Correspondence to obtain such information as may be necessary for unity of action among those interested in the several roads.

Resolved, That we wish the friends of both roads to take notice that we, upon this end of the roads, are up and doing, and that we expect them to do likewise.

Resolved, That we return our thanks to Mr. Ford, Engineer of the Pacific Road, and P. E. Bland, Esq., of St. Louis, for their kindness in furnishing our Committee with data and estimates.

Resolved, That all papers friendly to both roads be requested to publish our proceedings, and that the County Court be requested to cause the same to be published for the use of our citizens.

The meeting was then addressed by Robert Waide, Esq., upon the subject of Railroads and their advantage to the country.

On motion of Geo. Whitcomb, Esq., the thanks of this meeting were tendered to Gen. Gibbs, for his able address on this occasion.

After which, the meeting adjourned *sine die*.

NOAH HANDY, President.

JOHN C. THOMAS, Secretary.

Railroads in Arkansas.

Good fortune brings friends. The United States Railroad Survey through Arkansas, the grant of lands for railroads throughout the length and breadth of the State, the energetic and liberal action of the people along the Cairo and Fulton line, the engagement by the C. & F. R. R. Co. of THOS. S. O'SULLIVAN, Consulting Engineer, and of JAMES S. WILLIAMS, Engineer in chief, with two corps to survey the route immediately, and the moral force of surrounding circumstances combined with the cautious management and dispatch of business which characterize the C. & F. R. R. Co., have given the Cairo and Fulton Railroad a commanding position and secured its fortune as the main trunk road in the State.

These considerations maintaining and promoting the interests of the Cairo and Fulton Railroad, the friends of other roads in the State find that they can injure it much less than it can do them good; and now, therefore, it may be reasonably expected, as it is also significantly foreshadowed by the Railroad meetings in various parts of the State, that a large majority of the people are rapidly

becoming attached to the main trunk, that they desire their favorite branches to be grafted on it, in order to derive radical support, and realize the fruits of their enterprises in the shortest possible time. One instance of the good the Cairo & Fulton Railroad Co. are doing for all the other railroad enterprises in Arkansas, is in the publication of a map now being engraved by JULES HUTAWA, of St. Louis, showing the route of their road, the Helena & Memphis routes to Little Rock, the two routes from Little Rock to Fort Smith, one north and one south of the river, the Gaines' Landing and Fulton route, the New Orleans and St. Louis route, together with a vast variety of other railroad routes, co-operating in an eminent degree to promote the prosperity of the whole State of Arkansas.

Other instances of material assistance, to the various railroad enterprises in Arkansas, will frequently occur, flowing from the liberal and richly stored mind of the consulting and of the chief Engineer, of the Cairo and Fulton Railroad.

Iron Mountain Railroad.

This company has met with formidable obstacles impeding the right of way along the Mississippi from St. Louis to the Meramec river, obstacles raised not only by private landholders, but also by the War Department of the United States. The War Department, however, proves less formidable than private land-holders. The former has reasoned and proposed tolerable though still unreasonable terms. The latter stubbornly persist, with exorbitant demands which if universal along the route would be unsurmountable. If the company cannot overcome these obstacles, and attempt to get around them, the right of way will be more liberally obtained. In the mean while the work under contract will progress at points beyond those where the difficulties exist, and by working around them, in time, the road may be brought into the city an easier way.

Two corps of engineers are now surveying routes south of the Iron Mountain, with instructions to explore the whole country bordering the line of the extension to the Mississippi and to the Arkansas line.

The Cairo and Fulton R. R. Co. having organized two corps of engineers for the survey of that road, and having made preliminary arrangements for a third to co-operate with the Iron Mountain R. R. Co., the number is thus increased to five corps on the route from Red river to the Iron Mountain. These movements inspire additional confidence in the continued prosperity of both roads.

Hannibal and St. Joseph Railroad.

Col. R. M. STEWART, the prudent and energetic President of this company, returned from New York on the 18th September, having made satisfactory arrangements for means to prosecute the work. The Board of Directors will meet on the 3d, and the Stockholders of the company on the 7th of November next, at Chillicothe. The people of North Missouri should do all in their power to build this road out of their own means; as the Grant of Congress will secure a premium for the stock, and the business of the road will repay large dividends. We are pleased to notice the genial influence exerted by this enterprise, near the heart of North Missouri, as appears by the following item taken from the *Trenton Pioneer.*

CHILLICOTHE.—Duty called us to this prospering town and neighbor of ours a few days ago, and we were surprised as well as gratified to witness the effect the Railroad has had on it. The time has been, when some were loud in their predictions of the downfall of Chillicothe; but if such opinions were seriously entertained, it needs but a glimpse of the place now, to convince all that they were "false prophets;" and if she ever was in the ashes, she has arisen, Phœnix like, and donned the garb of prosperity, energy and industry. The improvement of Chillicothe, within the past two years, is unparalleled in the history of country villages, and she now stands prominently, as a place of much importance in the business world. There are several steam saw mills in the vicinity of this place, and everything around, gives flattering evidence that the motto of the people is "onward."

North Missouri Railroad.

On the 6th September, 1853, the first division of this road was located from St. Louis to St. Charles; and on the 15th of Oct., thirty proposals were made to build this division, the most of which proposals are held under consideration. On the last mentioned date the two corps of engineers, one having started from the Iowa boundary, and the other from St. Charles, met in the town o Mexico, Audrain county. They will survey different routes that the character of the country may be fully disclosed, and the most practicable route discovered.

Pacific Railroad.

On the 24th day of October, 1853, the tax-payers of St. Louis county voted on the proposition of the County Court, whether the county should subscribe $300,000 to the capital stock of the company, raising the total subscription of the county to this road to $500,000, and the result was 3,724 votes for, and 862 against the subscription; majority 2,862 in favor. The amount of city and county subscriptions of St. Louis to the Pacific Railroad is now $1,000,000, which with the private subscription in St. Louis $605,000, amounts to $1,605,000. This fact must arouse the people of the other counties along the line to subscribe their proportionate shares, and carry on the road out of their own resources.

Alton & New York Railroad Connexion.

On the 17th October, 1853, the Railroad connexion between the cities of Alton and New York — between the Mississippi river and the Atlantic ocean—was established. The Chicago and Mississippi R. R. Co. advertise that passengers can be transported from New York to St. Louis in 60 hours, and from Chicago to St. Louis in 20 hours. We are informed that a trip from New York to St. Louis, *via* Railroads to Alton, was made in 57½ hours, and from Chicago to St. Louis in 19 hours. This connexion will accumulate trade as well as travel on the northern route, and greatly enhance the profits on the whole line. Passengers leave St. Louis in the morning at 7 o'clock and, after ferrying the river to Alton, take the cars on the Chicago and Mississippi R. R. to Bloomington, then on the Illinois Central to Lasalle, then on the Chicago and Rock Island to Chicago, then on the Northern Indiana and Southern Michigan to Toledo, and so on, by the Lake shore and New York Railroads, and arrive at New York city in less than 2½ days.

COMMERCIAL STATISTICS.

[From Hunt's Merchants' Magazine.]

Revenue of the United States for the Fiscal Year ending June 30th, 1853.

	From Customs.	Public Lands.	Miscellaneous.	Total.
First quarter	$15,723,935 71	$415,945 91	$201,450 10	$16,341,331 72
Second quarter	11,307,465 45	243,587 16	33,818 37	11,584,870 98
Third quarter	16,208,498 82	422,030 70	172,555 50	16,803,085 10
Fourth quarter	15,691,965 54	585,521 14	344,299 92	16,624,636 60
1853	$58,931,865 52	$1,967,084 99	$752,123 89	$61,353,924 40
1852	47,339,326 62	2,043,239 58	345,820 69	49,728,386 89
1851	49,017,567 92	2,352,305 30	943,106 65	52,312,279 87

This comparison will enable us to make a closer estimate of the total dutiable imports for the last fiscal year, than the one previously given:—

	Rec'd from Customs.	Dutiable Imp's.	Free Goods&Specie.	Tot. Imp's.
1852	$47,339,326 62	$183,252 508	$29,692,934	$212,945,442
1853	58,931,865 52	228,127 710	30,000,000	258,127,710

Foreign Imports at New York for 8 months, from January 1st.

	1850.	1851.	1852.	1853.
Entered for consumption	$72,288,772	$82,041,898	$72,209,450	$110,347,159
Entered for warehousing	11,659,644	9,845,001	5,916,630	15,813,888
Free goods	6,207,603	6,803,459	9,335,327	10,336,526
Specie	12,522,173	1,666,979	2,085,165	1,611,231
Total imports	$102,678,192	$100,357,337	$89,546,572	$138,108,804
Withdrawn from warhouse.	7,094,156	8,132,230	10,925,568	9,972,966

Exports from New York to Foreign Ports for Eight Months, ending August 31st.

	1850.	1851.	1852.	1853.
Domestic produce	$27,428,526	$28,904,460	$27,452,183	$34,845,630
Foreign merchandise [free]	463,299	396,630	588,442	1,090,526
Fo. merchandise [dutiable]	3,070,365	2,600,688	2,966,285	2,865,901
Specie	5,413,548	27,771,129	18,531,341	13,763,567
Total exports	$36,375,738	$59,672,907	$49,538,251	$52,565,624
Total, exclusive of specie	30,962,190	31,901,778	31,006,910	38,802,057

Comparative Deposits at the Philadelphia Mint for the first eight months of the year, and the shipments from San Francisco:—

	Deposited at Philadelphia Mint			Shipments from S. Francisco.	
	1851.	1852.	1853.	1852.	1853.
January	$5,071,669	$4,161,688	$4,962,962	$2,905,770	$1,821,604
February	3,001,970	3,010,222	3,548,523	1,770,122	5,731,273
March	2,880,271	3,892,156	7,533,752	2,173,304	4,810,818
April	2,878,353	3,091,037	4,766,000	3,467,293	7,660,851
May	3,269,491	4,335,578	4,425,000	5,470,923	2,776,574
June	3,637,560	6,689,474	4,545,179	3,570,266	6,198,432
July	3,127,517	4,193,850	3,491,000	4,119,509	4,132,601
August	4,135,312	2,671,563	5,372,000	3,608,303	4,705,582
Total	28,002,143	32,045,598	38,644,416	27,085,490	37,837,735

LITERARY DEPARTMENT.

Valley of the Ohio.

ITS CONQUEST AND SETTLEMENT BY AMERICANS.

BY MANN BUTLER, ESQ.,
Author of the "History of the Commonwealth of Kentucky."

Continued from page 341, vol. X. No. 65.

This is a curious relic of frontier adventure; it is full of particulars of the hardships of Indian life, as well as the dangers and difficulties of a woodman's carreer. Its author was, afterwards, long distinguished in the councils of Kentucky.

The next class of explorers was not from Virginia or Pennsylvania by the route of the Ohio river; but from North Carolina, by the way of the Cumberland Gap, one of the celebrated routes through the wilderness. These may have been traders with the southern Indians, for peltries, which have ever been a subject of eager traffic on the frontiers. There was a route called the warrior's road or path (it is delineated in Filson's map of Kentucky,) "leading from the Cumberland ford along the broken country, lying on the eastern branch of the Kentucky river, and so across the Licking (river), toward the mouth of the Scioto."* It was much frequented by the northern and southern tribes in their passage through Kentucky, whether for the purposes of war or of hunting. Along this line of communication, it may be supposed, that *John Finley* was engaged in traffic with the Indians as early as 1767. Certain it is, that Daniel Boone received his first information respecting Kentucky from Finley, upon his return to North Carolina, where they both lived. It was not, however, till May, 1769, that Boone left his home, on the Yadkin river, in North Carolina, in quest of the famed hunting grounds of Kentucky. To do this, he and his five companions, John Finley, John Stewart, Joseph Holden, James Moncey and William Cool, were compelled to pass the broad mountain chain ridge, which separates the Atlantic waters from those of the Mississippi. After thirty-eight days of travelling, without any of the appliances of modern locomotion, but in bare woodman's costume.

This primitive route, through all the hardships, difficulties and dangers of a mountainous wilderness—the uncontested domain of the Indian, led across the vallies of the Holston and Clinch rivers, to the head waters of the Cumberland or Shawnee river; thence along the Warrior's Path, previously mentioned, by the Cumberland ford, over the head waters of the Kentucky river, to its eastern branch or Red river. But let us listen to his own words dictated to John Filson :† "We proceeded successfully, and after a long and fatiguing journey, through a mountainous wilderness, in a western direction, on the 7th day of June (1768) following, we found ourselves on Red river, the northernmost branch of the Kentucky river; where John Finley had

* Annals, p. 114.

† See Filson's Kentucky and Amer. Biog., XXIII.

formerly been trading with the Indians, and from the top of an eminence we saw with pleasure the beautiful level of Kentucky." The first impressions made upon these rude, but skilled observers of nature, can but be interesting to their descendants, and the millions who have profited by their hardy enterprise. "We found everywhere abundance of wild beasts of all sorts through this vast forest. The buffaloes were more frequent, than I have seen cattle in the settlement, browzing on the leaves or cropping the herbage on these extensive plains."* The luxuriant canebrakes, the luscious pasturage of Kentucky, its numerous streams stocked with fish, and, above all, its salt licks, rendered it a most favorite haunt of the game of the forest. Such is the universal description of the pioneers; no terms seemed grand enough to describe the fertility, the luxuriant growth and superabundant game of this Sylvan El Dorado. Is it, then, wonderful, that the Indian should adhere pertinaciously to his claims on this great natural park? It was the garden spot of the red man.

The party continued "hunting with great success, until the 22d of December, 1769;" when shortly after this, John Stewart, one of Boone's North Carolina companions, was killed by the Indians. He appears to be the first, so far as is known, of the numerous victims slaughtered in Kentucky by the Indians during their long, desperate and ruthless struggle with the white man, for their beautiful hunting grounds. This frontier war survived the revolutionary contest with Great Britain; and raged from the battle of Point Pleasant, in 1774, to that of the Maumee, under General Wayne, in 1794. Still, our author says, that he, and his brother Squire Boone, (who had reached the country some time before with supplies for his roving relative,) continued during the winter undisturbed by the Indians, until about the 1st of May, 1771, when they both returned to North Carolina.

But the solitude and danger of an Indian wilderness could not deter the heroic hunter from visiting the country again, under more propitious circumstances. Exploration of the wilderness seemed the ruling passion of Boone's soul. This was much assisted by the trodden paths and roads made by the wild beasts, and particularly the buffaloe, which lay in their way; in this manner they were led to many of the salt springs; at which salt has since been made for the consumption of its present inhabitants.† The fondness of the wild game for salt is as great, and the condiment as necessary to the game of the forest, as to the domestic herds and quadrupeds. During 1770, a party of about forty stout hunters, "from New River, Holston ond Clinch," united, "for the purpose of trapping, hunting and shooting game, west of the Cumberland mountains." "Nine of this party, led on by Col. James Knox, reached Kentucky, and from the time they were absent from home, obtained the name of the *Long Hunters*." This expedition reached the country south of the Kentucky river; and became acquainted with Green river, and the lower part of the Cumberland.‡ In addition to those parties, naturally stimulated by the ardent curiosity and love of daring novelty incident to early and

* Filson.

† Marshal's Kentucky, vol. 1, 9.

‡ Idem.

comparatively idle society; the claimants to military bounty lands which had been promised from the British crown for services against the French, furnished a new and bold band of western explorers. Their land warrants, issued under the authority of Lord Dunmore, were surveyed on the Kenhawa and the Ohio, as early as 1773; though most positively against the very letter of the royal proclamation of 1763.* They were surveyed on the site of the present cities of Louisville and Frankfort, in Kentucky, and through the adjacent country. Even General Washington visited the Kenhawa, in 1770, for the purpose of locating western land claims. His journal† shows the rapidity of settlements down the Ohio river, as low as the Kenhawa.

Amongst others, Thomas Bullitt, (uncle to the late Alexander Bullitt, who became the first Lieutenant Governor of Kentucky,) and Hancock Taylor, engaged in this adventurous surveying.

These gentlemen were overtaken on the Ohio river, on the 28th of May, 1773, by the McAfees. This party, consisting of James, George and Robert McAfee, James McCoun, Jr., and Samuel Adams, left Sinking Creek, in Bottetourt county, Virginia, and descended New River to the Ohio in canoes. Captain Bullitt was elected captain of the company, which continued together until they reached the mouth of the Kentucky river. At this point, Capt. Bullitt proceeded on to the Falls of Ohio; and the McAfees, with Taylor, ascended the Kentucky, or Levisa, (possibly a corruption of Louisa, which name had been attached to the Kentucky.) The adventures of these hardy adventurers well deserve to be enlarged upon.

On the descent of the Ohio river, Bullitt undertook to visit‡ the Indian town of old Chilicothe, on the Scioto. He proceeded through the woods, and arrived undiscovered by the Indians, until he was waving a white flag, as a token of peace. He was soon asked what news, and if came from the *Long Knife*, (the Indian appellation of the Whites,) as a peace messenger, why he did'nt send a runner? "Would you," said he, "if you were very hungry, and had killed a deer, send your squaw to town to tell the news, and wait her return, before you eat?" This simple address to their own feelings, soon put the Indians in good humor; and at his desire a council was called to hear his talk the next day. Captain Bullitt then made strong assurances of friendship, on the part of the whites; acknowledged that these "Shawanees and Delawares, our nearest neighbors" "did not get any of the money, or blankets given for the land which I and my people are going to settle. But it is agreed by the great men, who own the land, that they will make a present to both the Delewares and the Shawanees, the next year; and the year following that shall be as good." On the ensuing day, agreeably to the very deliberate manner of the Indians, in council, Capt. Bullitt was informed that "he seemed kind and friendly, and that it pleased them well. That as to settling the country on the other side of the Ohio with your people, we are particularly pleased that they are not to disturb

* Henning, VII, 687.

† Spark's Wash., II, 516.

‡ Butler's Kentucky, 2d Edit., p. 21.

us in our hunting. For we must hunt to kill meat for our women and children; and to get something to buy our powder and lead with; and to get us blankets and clothing." In these talks, there seems a strange want of the usual sagacity of the Indians as to the consequences of white men settling on their hunting grounds, so contrary to their melancholy experience for a century and a half previous. Yet the narrative is unimpeachable.* However this may be, the parties separated in perfect harmony; and Capt. Bullitt proceeded to the Falls of the Ohio. Here he pitched his camp above the mouth at Bear Grass creek, retiring of a night, to a *shoal*, above *Corn Island*, opposite the present city of Louisville.†

Another surveyor, by the name of James Douglas, followed Capt. Bullitt during the same year; and on his way to the Falls of Ohio, landed near the celebrated collection of mammoth bones which still goes by the emphatic name indicative of its contents—the *Big Bone Lick*, now situated in the county of Boone. This is the same collection noticed by Col. Croghan, in his descent of the Ohio, in 1765.‡ The latter gentleman speaks of the access to the Lick being by a "large road which the buffaloes have made spacious enough for two wagons to go abreast." Here Douglas remained forming his tent-poles of the ribs of the enormous animals which formerly frequented this remarkable spot; and on these ribs, blankets were stretched to form shelter from the sun and the rain. Many teeth were from eight to nine, and some ten feet in length; one in particular, was fastened in a perpendicular direction, in the clay and mud with the end six feet above the surface of the ground; an effort was made by six men, in vain, to extract it from its mortice or bed. The Lick extended to about ten acres of land, bare of timber, grass or any kind of herbage. It was much trodden, eaten for the saline particles, and depressed below the original surface; with here and there a knob remaining, like the pillars of earth left by excavators, to show the former elevation of the surface. Thus a period seems to be indicated, however, indefinitely, when this resort of numerous animals had not taken place. Through the midst of the Lick ran a creek, and on each side of it, a never failing stream of salt water, whose fountains were in the open field. To this Lick converged from all parts of the neighboring country, roads made by the wild animals, which resorted thither for the salt contained in the earth and the water of the Lick.

When the McAfees visited this Lick, in 1773, with Captain Bullitt, several Delawares were present; one of these being questioned by James McAfee about the origin and nature of those extraordinary bones, replied, that they were then, just as they had been, when he first saw them, in his childhood. Yet this Indian appeared to be at least seventy years of age. Collections of similar bones of animals, which have ceased to tenant the earth, are now familiar not only in the United States, but in other parts of the world; but none exceed,

* McAfee's papers.

† It was this gentleman who, according to the testimony of Jacob Sodowsky, a respectable farmer, late of Jessamine county, Ky., *first* laid out the town of Louisville, in August, 1773; and likewise surveyed Bullitt's Lick, in the adjoining county, of the same name.

‡ See Appendix.

it is believed, the one in question of the bones of the mammoth or mastodon.

In addition to these encroachments of the whites, on the hunting grounds of the Indians, the honesty of history requires the confession of repeated outrages upon the rights of the native tribes, which the popular hatred would not suffer the government to punish. These enormities have sunk into deserved oblivion, and are now only adverted to, that the justice of history may be preserved. Many of the inhabitants now retired into the interior of the colonies.

Some Thoughts on Self Intellectual Culture.

BY A MEMBER OF THE KEOKUK (IOWA) BAR.

Continued from page 410 of preceding volume.

The mind's powers and faculties are really and truly wonderful, and they belong to us for exalted purposes: for education, for expansion, for raising up and purifying our moral nature, for developing and energizing our intellectual nature, for becoming great and good ourselves, for rendering others great and good, for the exercise of benevolence and the increase and spread of knowledge, for promoting the beneficial interests of society, for usefulness *here*, and happiness *hereafter*. The design is intellectual progression, social elevation, and moral and civil freedom. And he who neglects the educating his mind, he, who persists deliberately in grovelling in the depths of ignorance, he who overlooks the numberless opportunities which the age and country permit for mental instruction and advancement, is guilty of a violation of positive duty, forgets his own most precious interests, and brings a voluntary degradation upon himself, and those connected with him in the various relations of life.

And we may add that it is through these faculties of the mind, and their close connection with man's highest happiness, that we hope to lay wider and stronger the foundations and elements of all practical science and useful acquirement among the great masses of the people, to establish and build up and cement the mighty fabric of education, and to mould it in the forms of beauty and excellence, until it shall embrace within its portals every mind to be improved, and protect beneath its canopy every circle of humanity; and thus pour floods of enlightened thought and general intelligence and individual power and civil freedom over the length and breadth of our favored land.

Having sufficiently established for our present purpose, the necessity of intellectual culture, and its intimate connexion with our constitution and happiness, the inquiry naturally suggests itself: How is this culture best to be promoted?

In a young and growing country, like our own, blessed with a fertile soil and salubrious clime, embracing a population deversified in its character, robust in its constitution, adventurous in its enterprize, conflicting in its habitudes of thoughts, and without a fixed literature, and posssessing institutions as yet in a state of infancy and probation, their organizations immatured, their capacities undeveloped, and the adequacy of their means to satisfy the growing wants of our people but imperfectly established—this question has a more than ordinary application and significance. The question is not, *how* we shall construct literary and scientific institutions on broad foundation and of solid structure, *hereafter* to become illustrious on the matriculation and graduation of rich and ripe scholars—*not how* we shall enlarge the boundaries, and elaborate the symmetry and proportions of knowledge—*not how* the exclusive minister at the altar of learning may be elevated and refined, and rendered still more prominent—*not how* the distinctions between the learned and unlearned shall be preserved;—but *the inquiry is*, *how* the public schools may be endowed reaching every class of our fellow citizens, and diffusing their influences, like the genial dews of heaven, upon all; *how* means shall be multiplied to meet the present wants and emergencies of an active, adventurous and growing society; *where and how* stimulants may be procured to excite the public mind to active and renewed and vigorous effort in the cause of public instruction; *in what manner* we shall seize upon the mental faculties of our youth, and throw them into direct collision with the elements and higher departments of learning, and compel them to rest upon their own native energies in the great conflict of existence; and *which* are the most efficient and available instruments in our power to accomplish the great purpose of disseminating intelligence, of penetrating the fastnesses of ignorance, of throwing open to every man, woman and child the whole empire of knowledge, of raising up and educating the broad, deep accumulated mass of uninstructed mind so affluent in capabilities that exists around us, and of pouring abroad over the whole bosom of society the lights of learning and science and morality.

This constitutes our appropriate field of investigation; and I enter upon it with a profound conviction of its magnitude and importance. I wish to impress the conviction upon the mind and heart of my readers with a force and clearness correspondent with my own, of the indispensable and paramount necessity of educating the minds of all our youth in the rudiments and general outlines of knowledge, if we really and sincerily wish to promote their true happiness, and establish their prosperity and preserve in their vigor and integrity the civil, religious and social institutions of our beloved country.

In the discussion of this interesting subject—covering as it does an extensive field of thought—my observations must necessarily

be general, and confined to the presentation of a sweeping and comprehensive outline of the subject. I shall, in the first place, allude to some of the means of mental improvement, substantially within the reach of all; secondly, present some views on self culture and the more important studies to be selected; and thirdly, endeavor to interest the young reader in the pursuits of learning, by exhibiting the encouragements that animate, and the rewards and compensations that most assuredly follow all intellectual effort of whatever mould, when judiciously directed and diligently pursued.

First.—Of the means of self-culture.

The system of common schools so generally adopted in our country, presents the most prominent element in the history of public instruction. It is so interwoven with our civil polity and social prosperity, as to have become a conservative portion in our political fabric, indispensable to its solidity, its permanency and its beauty.

I have neither time nor disposition, to present even an outline of the history of our public schools, nor is it necessary. The materials are too diversified, and reach back over too broad a period of time, for my present purpose, nor would the result be sufficiently instructive to compensate for the labor.

Their general usefulness is, I believe, universally acknowledged. On this ground all parties meet. The enviable condition of our country triumphantly vindicates their utility. The genius of our political constitutions, and the spirit of our people, are so consonant with enlightened mind, and so intimately allied with the progress of letters and sound education, as to render them mutually indispensable to the perfection of man's condition. Indeed, public instruction, in connection with moral development, constitute the solid pillars on which our national independence and prosperity repose with perfect security. The desire of the patriot and statesman is not to destroy or impair our admirable system of common schools; but to perfect its organization, introduce new improvements, and extend its beneficial influences until every member of this Republic shall be elevated through its power. In this point of view the subject is one of pervading importance to us. How we shall improve it? How we shall through this medium extend knowledge to all? How we shall elevate the character and attainments of the scholarship sought after here? How respectable and enlightened individuals may be induced to give more efficient aid and patronage to public schools? How far, and in what manner, government may judiciously interpose? And how we may permanently engraft upon the mind of this rapidly populating country the ground work and elements of a sound, useful and practical information? Are questions of vital interest to our well-being and permanent prosperity. They ought to be carefully and patiently investigated. The systems of other States and nations ought to

be examined and compared. Legislative influence should not only be invoked, but demanded. The public encouragement of education is an absolute right belonging to the citizen, and consequently imposes an imperative duty to be discharged by the Legislature. And this corresponding relation of right and duty, of justice and obligation, not only exists, but its exercise creates a higher and transcendent obligation. And that Republic is faithless to its duty, faithless to its best interests, faithless to every moral and christian impulse, which does not liberally, steadfastly and diligently cherish and support a well organized system of common schools. The qualifications of a teacher, the books to be selected, and the studies to be pursued, are matters requiring careful thought and judicious regulation. It is cheering to know that these topics are in process of thorough examination throughout our country, and that a healthy tone of sentiment prevails in reference to general education.

Another striking feature of the age is the increasing and transcendent influence of the press. Books, magazines, reviews and newspapers are multiplied with a rapidity, and distributed with a diligence, almost surpassing human conception. They are afforded too, at a rate so cheap, as to bring them within the reach of all. The most instructive and interesting portions of the entire acquisitions of science and literature and art are published in cheap, neat and attractive forms. In the present age it is within the power and ability of every community to possess a well selected and reasonably extensive library which will afford competent instruction in every department of human knowledge. By voluntary association and small subscriptions a valuable library accessible to every one may be acquired, enriching all with its treasures, and exhausting them not, pouring light into the abodes of darkness, bringing minds into close and pleasing intercourse with each other, eliciting temperate discussions, and binding neighborhoods mor eclosely together in the bonds of kindred thought and association and sympathy. The comparative ease and facility with which libraries may be formed at the present day, contrasts most strikingly with the enormous expense and almost insuperable difficulty of doing so a few centuries ago. Individuals of this generation, when the press multiplies and throws abroad so many excellent productions with such rapidity and cheapness, cannot sufficiently appreciate the vital importance and inestimable privileges conferred upon society and the public mind and heart by modern libraries. It is difficult to realize and comprehend fully the vast moral, social and governmental revolutions which have been effected through the instrumentality of the press, acting as it does in every walk in life, upon the absolutism of tyranny as well as upon the masses of democracy, beneath the shades of the academy and amid the retreats of the cloister, as well as in the legislative hall, the judicial forum,

the workshop, the common school, and the tribune of the people, the political arena.

Before the invention of printing, when all literature and science must necessarily have existed either in manuscript or in tradition, collections of books were exceedingly limited and immensely valuable. It presents to the mind a most curious and instructive picture to examine into the early libraries even so recently as the 15th and 16th centuries, and to compare their paucity and poverty, and even puerility, with the extent, variety and richness of those of our own day and generation.

A discursive glance at the past will impress our minds with the great and preeminent advantages we possess in this day of action and progression over our ancestors. The consideration of this subject ought to swell our bosoms with emotions of gratitude, that our lot is cast in an age so intelligent and in a country so free.

The first national library, it is supposed, was founded in Egypt, and according to a learned author seems to have been placed under the protection of the Divinities, for their statues most magnificently adorned the temple consecrated at once to Religion and Literature; thus beautifully blending the holy inspiration of the christian spirit with the purifying influences of cultivated mind and refined taste.

The Egyptian Ptolemies founded the library of Alexandria, so justly distinguished for the number and value of its works; and which afterwards met with such a melancholy and unexpected fate amid the ruthless devastations of war, while the star of the mighty Caesar was in the ascendant, and the Roman eagle was bathed amid the living glories of one illustrious triumph.

Pisistratus founded the first Grecian library, and Asinius Pollio the first public one in Rome. When the Roman empire became so enormous and overshadowing as to triumph over Greece, dispoil her of her magnificent trophies of genius and of art, and disrobe her of the richest habiliments of her intellectual creation, a passion existed among her citizens for the accumulation of immense collections of books, among whom Crassus, Caesar and Cicero were the most distinguished; and these illustrious Romans became not more celebrated for their magnificent libraries than for their literary refinement and profound erudition. Lucullus, whose princely opulence enabled him to indulge his taste for true learning, and whose enlightened mind taught him to appreciate the value of books, collected a vast and costly library, "whose walks, galleries and cabinets," as Plutarch observes, "were open to all visitors."

The ancients, says D'Israeli, bestowed the richest ornaments on their libraries: their floors were paved with marble, their walls covered with glass and ivory, and their shelves and desks made of ebony and cedar.

In Italy the first public library was founded by Nicholas Niccoli, a merchant of that State. The Arabians and Moors, the Ital-

ians, English and French, all encouraged in a greater or less degree the formation of libraries through the period of the dark ages when the human mind seemed to be almost impenetrably enshrouded in ignorance and superstition; and a broad dark cloud rested on and cast its shadow over the entire field of science and literature.

Let us turn aside the curtain of the few past centuries, and look into some of the libraries existing during the dark or middle ages, and contrast their voluminousness and value with those of the present age. This retrospective glance will not be without interest and instruction.

In 1341 the Bishop of Durham raised the first private library in Great Britain. It contained between *thirty and forty volumes*, and he paid for it, as we are credibly informed, *fifty pounds weight of silver*. This was at that period an exceedingly extensive and valuable collection, insomuch that a treatise was published in its praise.

In 1364, the Royal Library of France contained only *twenty volumes*, four of which were classics, and the remainder were principally books of devotion. In 1840, the same library embraced 480,000 volumes of books and manuscripts. Up to the beginning of the 15th century, England and Germany made very indifferent progress in science, literature, and the establishment of libraries, and Mr. Hallam, the distinguished historian, informs us, that a German named Tithemius had in 1526 collected about 2,000 manuscripts, a literary treasure which excited such extraordinary attention that princes and eminent individuals travelled long distances to visit it. At this period of time, 600 or 800 volumes constituted a library which royalty alone with princely revenues could command.

The Oxford library, in 1300, consisted of "a few tracts kept in chests," and as late as the 15th century only contained 600 volumes; it now numbers over 430,000 volumes.

The statutes of the new college at Oxford furnish a remarkable illustration of the value and scarcity of books in the 15th century. One of these statutes provided that "no man should occupy a book in the library above one hour or two at most, that others might not be hindered in the use of the same." And even as late as 1471, when Louis II., king of France, borrowed the works of an Arabian physician named Rhasis, from the medical faculty in Paris, he was required and did actually deposit as security for their safe return, not only an immense quantity of valuable plate, but was also compelled to procure a nobleman to join with him in a deed covenanting under a large forfeiture that they should be safely returned.

In the present age, the libraries of France are supposed to surpass those of any other nation or empire in number and value. Even England, with all her commercial affluence, royal munificence and imperial pride, in the grandeur, extent and solidity of her lit-

erary and scientific institutions, is behind the country of Charlemagne and Napoleon.

The most extensive and valuable libraries of our country are those of Harvard, containing in 1840 about 40,000 volumes, Boston Athenaeum 29,000 volumes, Philadelphia 30,000 volumes, Congress 28,000 volumes, New York Society Library 40,000 volumes, and the New York Mercantile Library embracing about 25,000 volumes

We are a vast distance behind Europe in the endowment of our libraries, as we possess none exceeding in 1840 about 40,000 volumes, whilst there are libraries at St. Petersburg, Vienna, Paris, Munich, Goettingen, Dresden, Copenhagen, Berlin, Rome and London, ranging from 300,000 to 500,000 volumes each. The public libraries of Paris alone number about 250,000 different volumes, and the aggregate of the public libraries in France, it is estimated, amounted in 1840 to 4,500,000 volumes.

Let us not from this representation of the intellectual opulence and gigantic proportions of the libraries of Europe be discouraged in regard to our own country. Our republic is young in the history of nations. But an age has elapsed since she ranged herself among the independent sovereign powers of the world. There are those yet living in our midst who listened to her earliest voice in the cause of freedom, and witnessed the glorious standard of the Republic when it was first unfurled to the breeze, amid the prayers and acclamations of a brave and free people who gave it

"to the God of storms
The lightning and the gale."

Time has not yet matured our destiny. Labor and wealth and mind have not yet completely modelled and consolidated our power. Vast intellectual opulence springing from a superabundance of individual wealth has not yet hewed out the future colossal architecture of our literary and scientific institutions, nor has genius and taste had leisure to bathe themselves in the crystal depths, or array themselves in the peerless glories of a national literature, constructed from the treasures of enlightened mind, acting under the influences of republican government, and crowned with the imperial diadem of civil and religious liberty. Our growing energies have yet to reach their full maturity and greatness and complete development. We are marching onward in our course with a rapidity unprecedented in arts, science, religion, civilization, and in all which elevates, humanizes and refines. Manufactures are springing up around us, and their machinery is working and toiling for us by night and by day: agriculture is opening her boundless wealth and accumulating her varied productions to feed, to clothe and to enrich: commerce is busy in every city and town, and whitening with its canvass every lake and ocean, spreading abroad the comforts and conveniences and luxuries of life: the mechanic arts are in a highly advanced state of perfection, and beyond all and above

all, there is an amount of solid intelligence and of full vigorous thought and of practical sterling judgment and of indomitable energy and enterprize among our people connected with all these, unequalled in any other country. A mighty empire is indeed established which it is our duty to consolidate, to adorn and to transmit unimpaired through future generations.

Libraries, among us, are increasing in number and value with a great and praiseworthy rapidity; and if they are not equally imposing and princely in their character and magnificence with those of transatlantic birth, yet they possess an immeasurably transcendant practical and political value; and are disseminating among us in every vale and town and city the choicest gems and most exalting and cherished influences of literature and philosophy and intellectual refinement and civil and political wisdom.

In the State of Yew York, there are in her common school libraries about 1,500,000 volumes—all valuable and interesting in their character—adapted to the wants and tastes of the rising generation, and admirably designed to develop and cultivate the moral and social affections, and impress the mind deeply with sentiments of exalted and devoted patriotism.

This most liberal distribution of books among the New York district schools, is in a very great measure attributable to the commendable exertions and enlightened judgment of the Hon. John C. Spencer, while Superintendent of Public Instruction, to whom I am happy to bear this humble tribute of respect and praise for his untiring labors and successful efforts in the cause of public education.

If other States will pursue the same liberal and enlightened policy—if the citizens will move forward, willingly, earnestly, perseveringly in their aid—we shall soon witness the successful establishment of libraries throughout the length and breadth of our Union, far transcending those of Europe in solid practical usefulness, and infinitely more consonant with the genius and spirit of our social, civil and religious institutions. They will be within the reach of all—instructing and enlightening all, and binding our whole people more closely together in the bonds of a common sympathy and interest. A solemn duty rests upon each and every State to establish, on a broad and permanent basis, our educational institutions, and to lend them a liberal and efficient encouragement. Government ought to stretch forth its strong arm in their support, and every friend of his country should generously and energetically co-operate in prosecuting this great enterprize.

Not only each State ought to emulate the others in this noble work, but every portion of each State, every county and town and city and village should rouse their energies, exert all their influence, and contribute to the extent of all their pecuniary ability, in advancing the cause of public education and morals.

[To be continued.]

RENÉ.

Translated from the French of Chateaubriand.

BY ISAAC W. TAYLOR, ESQ.

In arriving among the Natchez, René was obliged to take a wife, according to the custom of the Indians, but he did not pretend at all to live with her. A certain predisposition to melancholy led him continually to the depths of the forest, where he would pass entire days, seeming imbued with all the wildness of the savage natures by which he was surrounded. Except with Chactas, the father of his adoption, and father Souel, a missionary at Fort Rosalie, he appeared to have renounced all commerce with mankind. These two old men had acquired almost unbounded dominion over his heart; the first, by the most amiable indulgencies, and the latter, on the contrary, by the extremest severity. From the time of the beaver-hunt, when the blind Sachem had related to René the history of his adventures, the latter had exhibited no disposition to recount his own. Nevertheless, both Chactas and the missionary, desired ardently to know by what misfortune, a well-born and well-educated European had been driven to the strange resolution of burying himself in the wilds of Louisiana.

René always assigned as a reason for his silence the slender interest which attached to his history, confining itself, as he protested, simply to an account of his thoughts and emotions. "As to the event," added he, "which drove me to America, duty requires that I consign its memory to eternal oblivion."

Some years had thus rolled by, and the two old men were still unable to drag from René the story of his secret. In the mean time, a letter which he received from Europe, through the office of foreign missions, increased his sadness to such a degree, that he fled even the sight of his aged friends. They, on this account, were more than ever urgent with him, to open to them the secret of his heart; and they plied their task with such consummate address, such tact of gentleness and authority, that René was finally obliged to yield to their solicitations. He chose a day then, to recount to them, not the adventures of his life, for of these he had experienced none, but the hidden sentiments of his soul.

On the 21st of that month which the savages call "the flower-moon," René presented himself at the wigwam of Chactas. He

gave his arm to the old Sachem, and conducted him beneath the shade of a sassafras, on the borders of the Mississippi. Father Souel did not keep them waiting for his presence at the place of meeting. The first blush of morn had tinged the eastern sky: on the distant plain was visable the village of the Natchez, with its grove of mulberries and its tiny wigwams, resembling bee-hives, in the distance. The French colony and Fort Rosalie, appeared to the right, on the border of the river. The tents, the half-finished houses, the fortresses commenced, the newly cleared ground dotted over with negroes, and the groups of whites and Indians, afforded, in that little space, a striking contrast between the social customs of civilized and savage man.

Toward the East, terminating the perspective, the first rays of the advancing sun, could be seen between the unequal summits of the Apalaches, which were painted in colors of azure against the golden skies; to the West, the Mississippi, magnificent border of the picture, rolled its flood in majestic silence.

The young man and the missionary admired for some moments the enchanting prospect, and deplored the fate of the blind Sachem who could no longer behold and enjoy it; then father Souel and Chactas, seating themselves on the turf, at the foot of the tree, René took his place between them, and after a moment of silence, thus addressed his aged friends:

"I am not able, in the commencement of my story, to preserve myself from some slight emotion of shame. The peace of your hearts, venerable old men, and the calm presence of nature about me, call the blush to my cheek for the unquiet and the agitation of my soul. How can you pity me! How miserable must appear to you the inquietudes which leave me no repose! You who have quaffed deeply of all the actual sorrows of life, what will you think of a young man, without firmness or virtue, who finds his sole torment in himself, and has little to bewail in his fortunes, except the ills himself, hath made? Alas! condemn him not; he is already too greatly punished!"

"My birth occasioned the death of my mother. I was torn with iron implements from her womb! I had one brother on whom my father doated because in him he beheld the eldest born. As for me, delivered over, from early infancy into the hands of strangers, I was reared far away from the sanctuary of the paternal roof. My mood was impetuous, and my character capricious. By turns,

stormy and joyous, silent and sad, I would assemble about me my young companions, then quitting them suddenly, would hasten to seat myself in some sequestered spot, to contemplate the vagrant cloud or listen to the rain-drops as they beat upon forest leaves. Each autumn I returned to the parental castle, which was situated in a wood, near a lake, in a retired province. Timid and constrained in presence of my father, I never felt myself easy and happy except when near my sister Amelie. A pleasant conformity of humor and of tastes had attracted me closely to that sister, who was a little older than myself. We delighted to climb the hills together, to row upon the lake, and to course through the woods strewn with autumnal leaves. The recollection of these rambles to this moment thrills my soul with delight. Oh! illusions of infancy and of country! Will ye never loose your charm?"

"Sometimes we walked in silence, with ears attentive to the mournful sighs of autumn, or to the sad rustle of dead leaves beneath our feet; then, in our joyous mirth, we pursued the swallow to the moor or chased the rainbow upon the misty hill-tops. Sometimes also, we murmured those verses of poetry which the contemplation of nature had inspired. Though young, I wooed the muses, for there is nothing of higher poetic sensibility, than a heart in the fresh bloom of its passions, and touched only by the wing of sixteen departed years. The morning of life, like the morning of day, is full of purity and images of harmony. On sabbath and fete days, I have often heard, in the grand forest, through the trees, the sounds of the distant bell which called to the temple of the Most-High, the rural peasantry. Leaning against the trunk of an elm, I have listened in contemplative silence to the murmurs of devotion. Each trembling sound of the brass reminded my uncorrupted heart of the innocence of rural manners, the calm of solitude, the charm of religion and the pleasing melancholy of infantile recollections. Oh, what heart so dead as not to leap at the sound of natal bells! of those bells which peal joyously over the sense of earliest infancy, which announce one's advent into life, and mark the first beating of one's heart, which publish to all the world a father's joy; a mother's woe and her still more unbounded transport! We experienced all these emotions in those enchanting reveries united by the sound of the natal bell: reveries of religion, family, country, the cradle and the tomb—the past and the future! It is true that both Amelie and myself enjoyed ourselves unusual-

ly, in cherishing grave and tender thoughts, for each of us had a heart profoundly touched with melancholy, a trait bestowed upon us by nature or derived from our mother. In the meantime, my father was attacked by a disease, which speedily consigned him to the grave. He expired in my arms, and I first learned of death, from the lips of him who gave me life. That impression was profound and still endures. It was the first time that the immortality of the soul was presented clearly to my comprehension. I could not believe that the inanimate dust before me was the author in me, of thought, of reason; I felt that this should come from another source, and in a sacred sorrow bordering upon joy, I hoped at some future, to join the spirit of my father. Another phenomenon confirmed me in this elevated conception. The lineaments of my father's face had assumed in his cerements, an aspect approaching to sublimity. Why should not that astonishing mystery seal the truth of our immortality? Why should not death, which unlocks all mysteries, stamp the secrets of another world upon the brow of its victim? Why should there not be, in the tomb, a sublime vision of eternal truths?"

"Amelie, overwhelmed with sorrow, had retired to the recesses of a tower, whence she could hear the echoes of the funeral dirge and the tolling bell, resounding through the arches of the Gothic castle. I accompanied my father's body to its last resting-place; —the earth closed upon his remains;—eternity and oblivion rested upon him. The same evening, the unconscious wayfarer wandered indifferently by his tomb, and except for the tender sorrow of his bereaved daughter and son, the world would not have known that he ever had existed. It now became necessary that I should take my departure from the paternal roof, which had become the heritage of my brother. I retired, with Amelie, to the homes of some aged relatives."

"Checked at the very threshhold of life's deceptive paths, I meditated upon each, without daring to enter upon either. Amelie often discoursed to me upon the happiness of a religious life, and regarding me with touching sadness, would protest that I was the only tie that bound her to the world. My heart being affected by these pious conversations, I oftentimes directed my steps towards a monastery, near to my new place of abode. At one time, indeed, I was tempted to bury my life in this holy retreat. Happy those who end the voyage without quitting the post, and who have

not struggled through days of useless toil, as I have done! European society, in eternal commotion, has been obliged to subdue the wilderness for homes. In proportion as our passions are tumultuous and stormy, is the ratio of our enjoyment of quietude and silence. The monasteries in my native country, ever open to the unhappy and the defenceless, are often concealed in valleys, which convey to the heart a vague notion of misfortune hoping for sheltered security. Sometimes also, these asylums are seen in the most conspicuous situations, where the religious soul, as a mountain flower, can raise towards heaven, the perfumed incense of its devotions. I can still vividly recall the mingled majesty of forest and of flood which surrounded that venerable abby, where I thought to seclude my life from the waywardness of fortune; and I wander yet, in fancy, through its solitary and resounding cloisters. When the moon illuminated one side of the arch-crowned pillars, and cast their shadows upon the opposing wall, I have paused to contemplate the cross which marked the city of the Dead, and the creeping vines which twined among the tomb-stones. Oh! mortals, who have lived far from the stormy tumults of the world, and have passed from the silence of such a life to the silence of death, with what disgust am I filled, by the sight of your tombs, for all the pomps and vanities of earth!"

"Either a natural inconstancy of disposition, or a prejudice against monastic life, induced me to change my purpose, and resolve to travel. I bid adieu to my sister, who clasped me in her arms, in a sort of joyous transport, as if she was happy at the separation. I could not prevent some bitter thoughts upon the incongruities of human friendship."

"In the meantime, full of enthusiasm, I launched my barque upon the stormy ocean of life, knowing neither its havens of safety, or its hidden rocks of destruction. I first visited the abodes of nations that have vanished from the earth. I went abroad, and seating myself amid the ruins of Rome and of Greece, countries of great and glorious memory, where palaces are buried in dust, and the tombs of kings are overrun with brambles, exhibiting the resistless might of time, and the puny weakness of man. Oftentimes the tiny blade of grass would make its way through these marble mausoleums, now strewn in ruins, and which all the mighty dead, puissant as they were in life, could never rear again."

"Sometimes a solitary column would show its majestic form in

the desert, like a great thought which lifts itself occasionally from the arid surface of a soul which time and sorrow have strewn with desolation. I meditated over these monuments through all the accidents and all the hours of the day. Sometimes, the same sun which had seen laid the foundations of these glorious cities, went down, in majestic splendor before me, upon their ruins. Sometimes, the moon, lifting her orb through the pure heavens, and pouring her mild radiance over broken urns and scattered dust, revealed to me the pale tenements of the dead. Oftentimes, under the ray of that trembling star which wooes the soul to revery, I have fancied the genius of memory seated all pensive at my side."

"But I forbid myself to dig into the coffined secrets of the departed, where I disturbed but too often the repose of guilty dust. I wished to see if the races of living men would present to my contemplation more of virtue or less of sorrow, than departed nations. As I walked one day, in a great city, in passing behind a gorgeous palace, in a retired and deserted court, I perceived a statue which pointed with its marble finger to a spot made famous by a sacrifice. I was struck with the solemn stillness of the place. The wind alone, sighed mournfully around the tragic marble. A few laborers were seated, with an air of indifference, about the foot of the statue, and idly whistled as they plied their stone dressing craft. I asked of them what meant that monument. But few of them could, with difficulty, tell me its import, and the others were totally ignorant of the catastrophe which it commemorated. Nothing could have given me a more just estimate of the events of life and the littleness of man! Where now are those who filled the world with the noise of their amazing pomp? Time makes a step, and the entire earth is changed."

"I sought, above all things, in my travels, artists and those divine men of song, who celebrate the gods, with the music of the lyre, and sing the happiness of nations which honor law, religion, and the tomb. These children of song are of heavenly origin, and possess the only celestial talent known upon earth. Their life is at once simple and sublime; they celebrate the gods in golden numbers, and are at the same time the most artless of men, they are either superhuman or as little children; they expound the laws of the universe, and are unable to comprehend the most trivial affairs of ordinary life; they have sublime ideas of death, yet pass as unconsciously from life, as new-born babes."

"Upon the mountains of Caledonia, the last bard, whose voice of song had disturbed the silence of those desert places, recited to me the poetic numbers in which a hero of old, consoled his declining age. We were seated upon the moss-eaten rocks; a torrent rolled its waters at our feet, a roe-buck sped past at a distance, and was lost amid the ruins of a fallen tower, and the sea-breeze swept mournfully over the heath of Cona. Now, christianity, daughter also of the mountains, has planted the cross upon the monuments of the heroes of Morven, and has swept the harp of David, by the borders of the same stream which heard the wail of Ossian's minstrelsy. As peaceful, as the divinities of Selma were warlike, she tends innocent flocks on the battle-fields of Fingal, and into the darkness where murderous phantoms dwelt, she has sent her angels of light and her ministers of peace."

[To be continued.]

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Fragment of Faust.*

FROM THE GERMAN OF GOETHE.

Bells ring and Choir sing.

CHORUS OF ANGELS.

Christ is arisen!
Joy to all mortal men,
Whom, a corrupting sin,
Creeping and born within,
Follies imprison.

FAUST.

What deep, pure humming, what a clear bright tone,
Draws from my mouth this glass with earnest pow'r?
Announce ye now ye hollow bells alone
The Easter-festival's first hallowed hour?
Ye chorus sing ye now that song consoling sung
At first around the tomb from the bright Angels' tongue?
New covenant to men who low'r!

CHORUS OF WOMEN.

With spice and incense,
We embalmed him with care,
We, faithful, intense,
With sad hearts, laid him there;
Clothing and binding
We cleanly wrapped 'round,
Ah! though these finding
Christ is not found.

CHORUS OF ANGELS.

Christ rose to ensure
The loving salvation,
Who, through tribulation
And wholesome probation,
All trials endure.

FAUST.

What seek ye earnestly and kind,
Ye heavenly tones in dust here earthly?
Ring ye around where yielding men ye find.
The message I hear well, faith only is unbirthly;

* Faust, having devoted himself to the learning of the world and mastered it, feels disgust at its emptiness, and, in despair of any satisfaction on earth, determines to commit suicide. On the eve of the day which commemorates the Resurrection of Christ he puts the chalice to his lips.—*Junior Editor.*

In wonder is faith lovingly enshrin'd,
To yonder sphere, striving I dare not venture
Near by the Gospel's glorious throne;
Yet was I used in youth to love to hear this tone;
It calls me back to life with gentle censure.
The kiss of heavenly-love, with tender rush,
Thrilled me when young on solemn Sabbath mornings,
And then the bell-tones rang full of mysterious warnings,
And prayer was then a burning joyous gush;
A mild, unspeakably mild longing
Made me through woods and meadows far off go.
Under hot tears and feelings thronging,
I felt a world within me grow.
This song announces sports of youth, their lively pealing,
Spring festivals all free and gay;
Kind recollection holds me now with child-like feeling
From the last earnest step away.
Oh! sound forth now your sweet, your heavenly strain,
The tear is gushing, earth has me again!

CHORUS OF FOLLOWERS.

Now has the buried one,
Himself, near on high,
Living, sublime, alone,
Raised up in the sky.
He, in a loving life,
Is near creating joy.
Us, on the earth in strife,
Grief and pain still annoy.
Left he to languish,
His loved ones, has he not!
Ah! and with anguish,
Over his lot.

CHORUS OF ANGELS.

Christ is arisen!
From corruption's womb, he,
Bursting the prison,
Has set you free.
Ye who praise him in deed,
Having love for your creed,
And the poor ye who feed,
Telling all to take heed
Of his glorious meed,—
There is the Master true,
Always with you!

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THEATERS.—The Artists' Association in their representation of the Italian Opera produced such a lively sensation in St. Louis till the middle of the month, that, after their departure, theatrical performances were below par. Ordinary pieces by ordinary actors gave no satisfaction, but Mrs. MCCREDY, with a genteel company, displayed taste and talent at *Bates'*, and Neafie, Couldock, Crampton, Cruise, Holland and Field concluded the month, at the *Varieties*, with *eclat*. The *People's* was closed during the latter part of the month, but early in the next Mr. Jamison and Miss Logan are expected to enliven its beautiful scenes with their spirited presence.

Lithographic Establishment.

SCHARFF & BRO., No. 71 Market street, St. Louis, Mo., are prepared to execute anything in the line of lithography; and especially, as they are in possession of the largest sized lithographic presses and stones, they are able to fill orders of the largest dimensions. They take and lithograph portraits and likenesses from daguerreotypes, engrave or lithograph show bill cards, business and visiting cards, diplomas, music, manifests, labels, facsimiles, bank notes, bank title, bank checks, bill heads, drafts, bills of lading, maps, town plats, &c.

☞ They particularly beg leave to request the special notice of the public to their crayon drawings and colored lithographs, in as much as this is the only establishment in the West, where this beautiful style of lithographing is practised.

P. & C. ROBYN'S Lithographic, Drawing, Engraving, and Co or Printing Establishment, No. 44 North Second Street, below Pine; St. Louis, Mo.

Portraits, Landscapes, Animals taken from life, Music, Vignettes for Books, Deeds, &c. Show bills, Labels, Business & Visiting Cards, Architecture, Machinery, Drawings, Plans, &c. Drawings of all kinds executed to Stone.—Copper and Steel plates, wood cuts. Manuscripts &c. transferred. All kind of color and ornamental printing executed in the best style, at moderate terms.

Paper Hangings.

THOMAS DALE,

Paper hanger, Whitener and Wall colorer, No. 139 Market street near Abec. Leitch & Co's. Drug store, St. Louis, Mo.

☞ Job Plastering done at short notice and best style.

☞ Orders for work promptly attended.

Manufacturers.

THOMAS GRAY, Blacksmith and Iron Worker, No. 93 North second street, between Olive and Locust, St. Louis, Mo. Keeps constantly on hand and manufactures to order Ox Chains, Sledges, Wedges, and every description of Mining Tools, also Iron Mitchies and Picket Pins.

☞ Blacksmith work for Housebuilders, at the lowest prices. ☞ He has always on hand the highly recommended Iron Frame Bedstead, and Camp Stool.

Mathematical Instruments.

J. BLATTNER, Mathematical and surgical Instrument maker, Dealer in Guns, Pistols and Sporting Materials, No. 98 North Second street, between Pine and Olive, St. Louis, Mo., manufactures, and has always on hand: Surveyor's Compasses, Leveling Instruments, Theodolite Pocket Compasses, 3 y-staffs, Barometers, Thermometers, reversing Instruments, Spectacles, Ivory and enameled Scales and Protractors, Hour and half Hour Glasses, Microscopes and Magnifying glasses, Hydrometers of silver and other kinds, Dissecting for anatomical subjects, Lancets, Electrical Machines, &c., also, Surgical and Dental Instruments; Pocket, Dissecting, Lancing and scissor cases; Tucker's Gravers, all sizes; Syringes, large and small, Saw Handles, Saw Gums; Pompey Turnscrews, Letter Seales and Weights for Druggists; Prescription Scales on Stands; Revolvers, Guns, Pistols, Powder Flasks, Game Bags, &c. ☞ All the above Instruments repaired at short notice in the best manner.

Fruit Trees.

FRUIT TREES AND SHRUBBERY, for sale by the undersigned, at their fruit farm and Nursery. This establishment is located seven miles South of St. Louis, Mo. There are Omnibus Coaches running daily from the City within one half mile of the establishment. The Nursery and Gardens are open at all times (Sundays excepted) for the reception of visitors. Horticulturists and amateurs are respectfully invited to visit the establishment and examine for themselves. In directing the attention of the public to their Nursery, they would remark that one of the firm, (Mr. James Sigerson,) has been engaged in the above business for the last twenty-five years; during that time he has tested many of the varieties now growing. Also with the assurance of their part of an intention to increase the number of their trees, as well as to add to their assortment from year to year, furnishes a strong guarantee to persons wishing to make choice selections of fruit, that they can always be supplied. Their prices for trees will be as reasonable as at any similar establishment East or West, and when desired, trees will be delivered free of charge in the city or put on steamers packed in good order for their destination.

☞ All letters addressed to John Sigerson, St. Louis, or to James Sigerson, Carondelet, will meet with prompt attention.

JOHN SIGERSON & BROTHERS.

Hardware.

P. KENNEDY, Manufacturer of Copper, Tin and Sheet Iron Work—such as Copper Pipes for Steamboats and Distilleries, Soda Fountains, Copper Cellies, Well and Cistern Pumps, and every other article in the line of business, No. 132 Main street, Southeast corner of Cherry, St. Louis, Mo. He also manufactures and keeps constantly on hand, Premium Steamboat Cooking Stoves. Tinware always on hand, Wholesale and retail.

Furniture.

WM. E. BARLOW, proprietor of the St. Louis Furniture store, manufactures and keeps constantly on hand every variety of household furniture, mattresses, window blinds, willow ware, &c.

Also, manufactures to order every article in his line, with despatch. Orders from city and country attended to, and goods carefully packed. All goods warranted as recommended.

New Warehouse, No. 89 Second street, between Olive and Locust streets, St. Louis, Mo.

Slate Yard.

JOHN M. CANNON, Slater, No. 10 and 12 South Sixth street, St. Louis, would respectfully inform the public that, having now completed his arrangements, he is prepared to make contracts for all work in his line. He has in his employ practical slaters, and is well prepared to execute in a workmanlike manner, and with despatch, all orders entrusted to his care. He keeps constantly on hand, and for sale, Welsh slate, roofing slate, tiles, sheet lead, slate dazzling, slate battens, copper, brass and iron slating nails, Bowmahon cement, and all other articles pertaining to his business. He will strip and renew a new sheet iron, tin, or other covering, and substitute therefor Welsh slate remaining (not one cent) can be saved to advantage on another, which is not the case with any other roofing material. His tenements such as cannot but prove safe factory. Apply as above.

Lithographic Establishment.

SCHAERFF & BRO., No. 71 Market street, St. Louis, Mo., are prepared to execute anything in the line of lithography; and especially, as they are in possession of the largest sized lithographic presses and stones, they are able to fill orders of the largest dimensions. They take and lithograph portraits and likenesses from daguerrotypes, engrave or lithograph show bill cards, business and visiting cards, diplomas, music, manifests, labels, facsimiles, bank notes, bank bills, bank checks, bill heads, drafts, bills of lading, maps, town plats, &c.

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Paper Hangings.

THOMAS DALE,

Paper hanger, Whitener and Wall colorer. No. 155 Market street, near Alex. Leitch & Co's. Drug store, St. Louis, Mo.

☞ Job Plastering done at short notice and best style.

All orders for work promptly executed.

Manufacturers.

THOMAS GREY, Blacksmith and Iron worker, No. 80 North Second street, between Olive and Locust, St. Louis, Mo., keeps constantly on hand and manufactures to order Ox Chains, Sledges, Wedges, and every description of Mining Tools, also Iron Hobbles and Picket Pins. ☞ Blacksmith work for Housebuilders, at the lowest prices. ☞ He has always on hand the highly recommended Iron Frame Bedstead, and Camp Stool.

Mathematical Instruments.

J. BLATTNER, Mathematical and Surgical Instrument maker, Dealer in Guns, Pistols and Sporting Materials, No. 58 North Second street, between Pine and Olive, St. Louis, Mo., manufactures, and has always on hand; Surveyor's Compasses, Levelling Instruments, Theodolite Pocket Compasses, Spy-glasses, Barometers, Thermometers, Drawing Instruments, Spectacles, Ivory and Gunter's Scales and Protractors, Hour and Half Hour Glasses, Microscopes and Magnifying Glasses, Hydrometers of silver and glass, hydrometers for acids and salts, Magic Lanterns, Electrical Machines, &c., also, Surgical and Dental Instruments; Pocket, Dissecting, Cupping and self-injecting cases; Taylor's Shears, all sizes; Syringes, large and small, Scarificators, Lancets; Forceps, Tourkeys, large Scales and Weights for Druggists; Prescription Scales on Stands; Revolvers, Guns, Pistols, Powder Flasks, Game Bags, &c. ☞ All the above Instruments repaired at short notice in the best manner.

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Furniture.

WM. M. BARLOW, proprietor of the St. Louis Furniture Store, manufactures and keeps constantly on hand every variety of household furniture, mattresses, window blinds, willow ware, &c.

Also, manufactures to order every article in his line, with despatch. Orders from abroad promptly attended to, and goods carefully packed. All goods warranted as recommended.

New Warehouse, No. 88 Second street, between Olive and Locust streets, St. Louis, Mo.

Slate Yard.

JOHN M. CANNON, Slater, No. 15 and 17 south Sixth street, St. Louis, would respectfully inform the public that, having now completed his arrangements, he is prepared to make contracts for any work in his line. He has in his employ practical slaters, and is well prepared to execute in a workmanlike manner, and with dispatch, all orders entrusted to his care. He keeps constantly on hand, and for sale, Welch slate, rich tiles, sheet lead, slate lagging, slate hearths, copper, brass and iron slating nails, Rosendale cement, and all other articles pertaining to his business. He will strip from roofs and, sheet iron, tin, or other covering, and substitute therefor slate. Slate removed from one roof, can be used to advantage on another, which is not the case with any other roofing material. His terms are such as cannot but prove satisfactory. Apply as above.

Paper Hangings.

WOLF & ENGRAF, Importers and dealers in Paper Hangings, Colors and Fancy Papers, No. 48 South Second street, between Elm and Myrtle, St. Louis, Mo. Constantly on hand, all kinds of oil and water colors, paper-hangings, chimney screens, tester pieces, window shades, marble, marroquin, Gold and Silver paper, painters' and Dutch gold bronzes, lead pencils, paint boxes, paint brushes, drawing paper, &c. April, 1853

Washington Steam Sash Factory.

E. PHILIBERT,

WASHINGTON Avenue and 14th street, south side St. Louis, Mo., makes Doors, Sash and Blinds Also Door and Window Frames. Terms moderate N. B.—Sawing and Planing, done here.

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PAGE & BACON, Banking House No. 139 Main street, St. Louis, next door to the Bank of Missouri.

N. B. Deposits received, Drafts and Notes from all parts of the Union collected and Exchange on the East and South for sale at all times.

Also Branches of Exchange and Banking Houses at San Francisco and Sacramento Cities, California.

L. A. BENOIST & CO., bankers and exchange dealers, No. 83 Main street, east side third door north of Olive street, St. Louis, Mo. Interest paid to depositors, drafts and notes collected, sight and time bills purchased, and sight exchange on the eastern cities and New Orleans for sale, at the lowest rates, in sums to suit purchasers.

JOHN J. ANDERSON & CO., bankers and exchange dealers on the north-west corner of Main and Olive streets, St. Louis, Mo. Interests paid to depositors, drafts and notes collected, sight and time bills purchased and exchange on the eastern cities and New Orleans for sale at the lowest rates.

LOKER, HENICK & CO., bankers and exchange dealers, No. 133 Main street, west side, third door north of Vine street, St. Louis, Mo. Interest paid to depositors, drafts and notes collected, sight and time bills purchased and sight exchange on the eastern cities and New Orleans for sale at the lowest rates in sums to suit purchasers.

LUCAS & SIMONDS, Bankers and Exchange Dealers, Corner of Main and Chestnut Streets, St. Louis, Mo.

Drugs.

CHARLESS, BLOW & CO., Importers and Wholesale Dealers in Drugs, Paints, White Lead, Oils, Window Glass, Glassware, Perfumery, &c., Nos. 70 and 72 Main Street, St. Louis, Mo.—☞N. B. Ginseng and Beeswax bought at highest market rates.

St. Louis Cotton Factory.

ADOLPHUS MEIER & CO., Manufacturers of St. Louis Cotton Yarn, &c., Importers and Dealers in HARDWARE and CUTLERY, No. 22, corner of Main & Chesnut Streets, St. Louis, Mo.

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H. & R. B. WHITTEMORE & CO., wholesale dealers in Hats, Caps, Bonnets and Straw Goods, No. 143 Main str., St. Louis, Mo.

☞Cash paid for Furs and Deer Skins.

Dry Goods.

CROW, McCREERY & CO., Wholesale dealers in Dry Goods, No. 71 Main street, St. Louis, Mo. Wayman Crow, Phoceon R. McCreery, Wm. H. Backsdale, Wm. A. Harguidine, Charles D. Appleton.

WOODS, CHRISTY & CO., wholesale dealers in Dry Goods, No. 75 Main street, St. Louis, Mo. James Woods, William T. Christy, James C. Christy, Robert E. Woods.

CHOUTEAU, HARRISON & VALLE, Commission Merchants and Proprietors of the St. Louis Rolling Mill. Manufacturers, from the ore of the Iron Mountain, of Bar Iron in all its various shapes; Sheet Iron and Boiler Plate, Nails, Spikes, &c., &c.
Warehouse No. 129 North 2d street, St. Louis

NORTH MISSOURI RAILROAD.

NOTICE TO CONTRACTORS.

SEALED PROPOSALS will be received at the office of the undersigned until the 15th day of October, 1853, for the Grading, Masonry, Bridging and Superstructure of the first Division of the North Missouri Railroad, extending from the city of St. Louis to the Missouri river opposite St. Charles. The superstructure will include the furnishing and putting down of Cross ties, Chairs and Spikes and laying of Iron.—Plans, Profiles and Specifications may be seen at the Engineer's Office, in St. Louis, on and after the 1st day of October next.

W. W. MORRIS,
Chief Engineer, N. Mo. R. R.

WESTERN JOURNAL.

A FEW full sets, neatly bound, 5M and new series, from January, 1850, during five years, for sale at $20 a set. Apply to TARVER & CORE, Editors and Proprietors, or to E. K. WOODWARD,
Corner Chesnut and Fourth sts.

Watches and Jewelry.

C. D. SULLIVAN & CO.,

JEWELLERS, Watch and Clock Makers, No. 39 Fourth Street, opposite the Planter's House. A large and well selected assortment of Clocks, Watches, Jewelry and Silver Spoons constantly on hand and for sale low. All kinds of Jewelry made to order and neatly repaired. Engraving neatly executed. The highest price paid for old Gold and Silver. All orders punctually attended to.
March 1853.

Flowers.

FLORA GARDEN.—This establishment contains a collection of Plants and Flowers not excelled, perhaps, by any in the United States. Of ROSES alone there are 220 varieties; and the proprietor has devoted ten years to storing his HOT-HOUSES, 120 feet long, with specimens of rare and beautiful plants, and flowers from almost every part of the globe. The garden is pleasantly situated on South Seventh street and affords a delightful retreat from the noise and dust of the city. A commodious SALOON has been fitted up and will be supplied with Confectionary, Ice Creams, and other refreshments suitable to the season and the place. Spirituous liquors are excluded from the premises. Bouquets of the richest flowers and most tasteful combination furnished throughout every season of the year.
March 1853. G. GUZHEL.